



Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES



FEMA



DEBRIS REMOVAL OPERATIONS PLAN

FOR THE

**CAMP DEBRIS REMOVAL INCIDENT
BUTTE COUNTY, CALIFORNIA
TOWN OF PARADISE, CALIFORNIA**

Version 4.0
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EXECUTIVE SUMMARY

During a local or state declaration of a State of Emergency, rapid response action is necessary to protect response personnel and the public from potential exposure to uncontrolled hazardous materials and toxic substances. Previous wildfire disasters have demonstrated exposures to response personnel and have shown that residents returning to their communities have encountered toxic substances within the dust and debris. Without the proper identification, handling, and removal of structural ash and debris (including asbestos), the public will continue to be at risk of exposure. To reduce these exposures from structural ash and debris, the California Governor's Office of Emergency Services (Cal OES) has authorized a coordinated emergency debris removal for the Camp Incident in Butte County.

California's Department of Resources Recycling and Recovery (CalRecycle) staff has prepared this Debris Removal Operations Plan with Project Specifications (Operations Plan) for Butte County in response to Executive Order B-57-18 issued by the Office of the Governor of California on November 14, 2018. The purpose of this Operations Plan is to identify the approach for removing ash and debris, other waste, and hazardous materials from the Camp Fire Incident. The Operations Plan is based on California Environmental Protection Agency's "Guidance for Conducting Emergency Debris, Waste and Hazardous Material Removal Actions Pursuant to a State or Local Emergency Proclamation" dated October 7, 2011, and other past debris wildfire incidents. This plan identifies best management practices for undertaking the removal of debris and hazardous materials and asbestos from residential and commercial structures after a significant wildfire. These best management practices and standardized methods will provide a consistent approach for conducting emergency removal and cleanup actions to protect response personnel, the surrounding community, public health, and the environment. This document does not address debris from large scale commercial or industrial sites. Separate environmental testing and health and safety protocols for industrial sites may be needed to assess the waste classification, handling, transportation, and disposal.

The Operations Plan will be implemented by all contractors under the incident management team's span of control and direction. This Operations Plan is considered a working document that will be revised throughout project progression and will be updated to include other supporting documents such as a soil background and cleanup goals report, site-specific health and safety plan, community health and safety plan, confirmation sampling plan and/or additional monitoring and sampling plans as appropriate and available.

This version includes the project participants and responsibilities table, information regarding the California Governor's Executive Order B-57-18, confirmation sampling procedures, and cleanup goals. All information provided in this plan is based on knowledge of field conditions at the time of revision and personal experience and knowledge of previous coordinated debris removal projects, environmental removal projects, structure fires, and waste management practices in the United States and abroad.

The local governments may also require similar project specification if a property owner chooses to clean up his/her properties independently and not participate in the state sponsored cleanup. The goal of this incident is to remove all debris, private and state, while minimizing the impact to the local community and work force.

The findings, information, and professional opinions are presented in accordance with generally accepted professional engineering methods and waste management strategies and are limited to the Camp Incident in Butte County. Any questions or comments concerning this report should

be referred to Mr. Todd Thalhamer at 916-341-6356 or todd.thalhamer@calrecycle.ca.gov, questions regarding the incident should be directed to the incident management team assigned to the project.

Mr. Thalhamer is a registered Professional Engineer in the State of California under license number C055197. His prior fire disaster experience includes daily observations and inspections, direct management of emergency resources and personnel, evaluation of cleanup tactics, assessment of environmental impacts, design of environmental remediation efforts, and evaluation of potential impacts from waste fires.

Mr. Thalhamer has prepared this draft report and will sign the final report with his seal as a Registered Civil Engineer in the State of California is affixed below. This Operations Plan is only valid for the Camp Incident and the use of this plan for any other site is neither valid nor warranted.

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- F. Debris Operational Guidance for Damaged Concrete from Wildfires
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Acronyms and Abbreviations

ACM	Asbestos Containing Material
AHERA	Asbestos Hazard Emergency Response Act
AQMD	California Air Quality Management Districts
BMP	Best Management Practice
CAC	Certified Asbestos Consultant
CalEPA	California Environmental Protection Agency
Cal OES	California Office of Emergency Services
CalRecycle	Department of Resources Recycling and Recovery
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CIH	Certified Industrial Hygienist
CHP	California Highway Patrol
CSST	Certified Site Surveillance Technician
DFW	Department of Fish and Wildlife (California)
DGS	Department of General Services
DMV	Department of Motor Vehicles
DOT	Department of Transportation
DRC	Disaster Recovery Centers
DROC	Debris Removal Operations Center
DTSC	Department of Toxic Substances Control
EO	Executive Order
FEMA	Federal Emergency Management Agency
GPS	Geographic Positioning System
HAZWOPER	Hazardous Waste Operations and Emergency Response
HHW	Household Hazardous Waste
ICS	Incident Command System
IMT	Incident Management Team
MOU	Memorandum of Understanding
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NIOSH	National Institute for Occupational Safety and Health

NOA	Naturally Occurring Asbestos
Operations Plan	Debris Removal Operations Plan with Project Specifications
Operations Team	Debris Removal Operations Team
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
ROE	Right-of-Entry Permit
SEMS	Standardized Emergency Management System
TF	Task Force
UCG	Unified Command Group
USA	Underground Service Alert (USA North – 811)
USACE	United State Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UXO	Unexploded Ordinance

1.0 INTRODUCTION

On November 14, 2018, the Governor of California, Edmund G. Brown Jr., issued an *Executive Order*, which declared a state of emergency in Butte County as a result of the Camp Incident. A copy of Executive Order B-57-18 is provided as *Exhibit A*. Additionally, on November 14, 2018, Butte County issued a Declaration of a Local Health Emergency, provided as *Exhibit B*. The Governor's Proclamation ordered all agencies of the state government to utilize and employ state personnel, equipment, and facilities for the performance of any and all activities related to this state of emergency consistent with the direction of the California Office of Emergency Services (Cal OES) and the State Emergency Plan.

The Proclamation suspended, to the extent they apply, the following activities: (a) removal, storage, transportation, and disposal of hazardous and non-hazardous solid waste and debris resulting from the fire that has burned in Butte County and that are subject to the jurisdiction of agencies within the California Environmental Protection Agency (CalEPA) and the California Natural Resources Agency; and (b) necessary restoration and rehabilitation of timberland, streams, rivers, and other waterways. Such statutes, rules, regulations, and requirements are hereby suspended only to the extent necessary for expediting the removal and cleanup of debris from the fire and for implementing any restoration plan by Butte County.

The Proclamation also suspended compliance with applicable provisions of the California Government Code and the Public Contract Code for state contracts, including but not limited to travel, advertising, and competitive bidding requirements to assist with procuring materials, goods, and services necessary to quickly remove dangerous debris and repair damaged resources.

In response to the Proclamation, Cal OES mission tasked California Department of Resources Recycling and Recovery (CalRecycle) to start Phase II of the debris removal and to work with local officials to design and implement a comprehensive structural debris removal plan. CalRecycle will enter into contracts and arrange for the procurement of materials, goods, and services necessary to quickly remove dangerous debris from private property resulting from the Camp Wildfire in Butte County. This project is funded by Federal Emergency Management Agency (FEMA) and Cal OES.

CalRecycle is working with Butte County to clear the debris, provide State certification of cleanup for the individual sites, and track and provide costs to the County for insurance recovery on a per site basis. As part of the work, CalRecycle has prepared this Operations Plan for Butte County and Cal OES, which identifies procedures and best management practices for undertaking the removal of debris from destroyed residential structures to protect response personnel, the surrounding community, public health, and the environment. Information related to this project was obtained by Cal OES, other CalEPA regulatory partners, and local government agencies. This document will be dynamic and updated as appropriate throughout the debris removal operations as conditions or contact information changes.

Under the direction of an Incident Management Team (IMT), CalRecycle will start Phase II work with its environmental contractors and collecting soil and air background. Once Right-of-Entry Permits are received from Butte County for individual property owners the consultant and contractors will start the removal process.

1.1 Purpose

The purpose of this Operations Plan is to provide a systematic approach for managing the removal of debris, contaminated soil, and hazardous material in a manner that is protective of the local community and the local work force. This plan was based on prior coordinated debris

removal projects by CalRecycle and CalEPA's "Guidance for Conducting Emergency Debris, Waste and Hazardous Material Removal Actions Pursuant to a State or Local Emergency Proclamation" dated October 7, 2011, and identifies best management practices (BMPs) for undertaking the removal of ash, debris, soil, and hazardous materials (including asbestos) from residential and commercial structures after the Camp Incident. These BMPs and standardized methods will provide a consistent approach to conducting removal and cleanup actions to protect response personnel, the surrounding community, public health, and the environment. This document does not discuss the removal of debris from significant commercial or industrial sites.

1.2 Objective

The objective of this Operations Plan is to meet the above requirements and detail processes and procedures for debris removal operations. This Plan will be provided to any consultants or contractors working on the Project as guidance for the State-sponsored debris removal to mitigate known hazards and dangerous conditions to limit the impacts to the public, surrounding environment, and Butte County.

1.3 Project Design

This project is not a standard construction project where a contractor and consultant are hired to build and oversee a typical construction project. Working with a possibility of 14,000 or more property owners impacted by the Camp Incident requires an additional management structure and response culture to be in place to ensure the debris is rapidly and safely removed. CalRecycle will be utilizing the Incident Command System (ICS) to manage this incident. The ICS model will be used on this disaster response for the command, control and coordination of all agencies and private companies working on the Camp Incident. All personnel will work as a team and follow the chain of command to ensure the community can rebuild.

With the anticipated 100 to 150 debris crews necessary to remove the 18,000 + structures, consultants and contractors will be required meet daily and follow the Incident Action Plan (IAP) as designed by the IMT. The command staff will set the objectives for the incident period and control the work flow on a daily basis. The Contractor may not begin any work on a property until authorized by the IMT.

The project will be completed in two phases. In Phase I, local government, state and federal agencies have organized teams of experts from the California State Department of Toxic Substances Control (DTSC) and U.S. Environmental Protection Agency (USEPA) to inspect your property and remove any household hazardous waste that may pose a threat to human health, animals, and the environment such as batteries, herbicide, pesticide, propane tanks, asbestos siding, and paints. Phase I is automatic and includes both residential and commercial properties destroyed by the fire.

Phase I is underway as of December 2018. DTSC and USEPA will only conduct household hazardous waste removal operations in areas where evacuation orders have been lifted. USEPA is coordinating closely with the Paradise Police Department and the Butte County Sheriff's Office to ensure DTSC and USEPA crews are only in areas where residents have had the opportunity to return.

In Phase II, Cal OES, FEMA, and local officials coordinate with the State's Debris Task Force and its debris-based Incident Management Teams (IMT) to conduct fire-related debris removal on properties which property owners have elected to participate in the State sponsored debris program by signing a Right-of-Entry (ROE) Form.

2.0 PROJECT OVERVIEW

2.1 Site Description

The Camp Fire started near Pulga Road at Camp Creek Road in Butte County. The fire burned 153,336 acres in Butte County and directly through the Town of Paradise where the majority of the structures were lost (See *Figure 1 and 2*). Approximately 13,972 residences, 528 commercial structures, and 4293 outbuildings destroyed were destroyed by the Camp Fire. An operation map of the Camp Fire can be found at http://cdfdata.fire.ca.gov/pub/cdf/images/incidentfile2277_4289.pdf, while a Camp Fire structure damage map can be found at <http://calfire-forestry.maps.arcgis.com/apps/webappviewer/index.html?id=5306cc8cf38c4252830a38d467d33728&extent=-13547810.5486%2C4824920.1673%2C-13518764.4778%2C4841526.1117%2C102100>.

Aerial drone images and 360 ° maps can be found at <https://buttecountyrecovers.org/consolidatedmaps/>.

Figure 1. Site Location Map of the Camp Incident, Butte County.

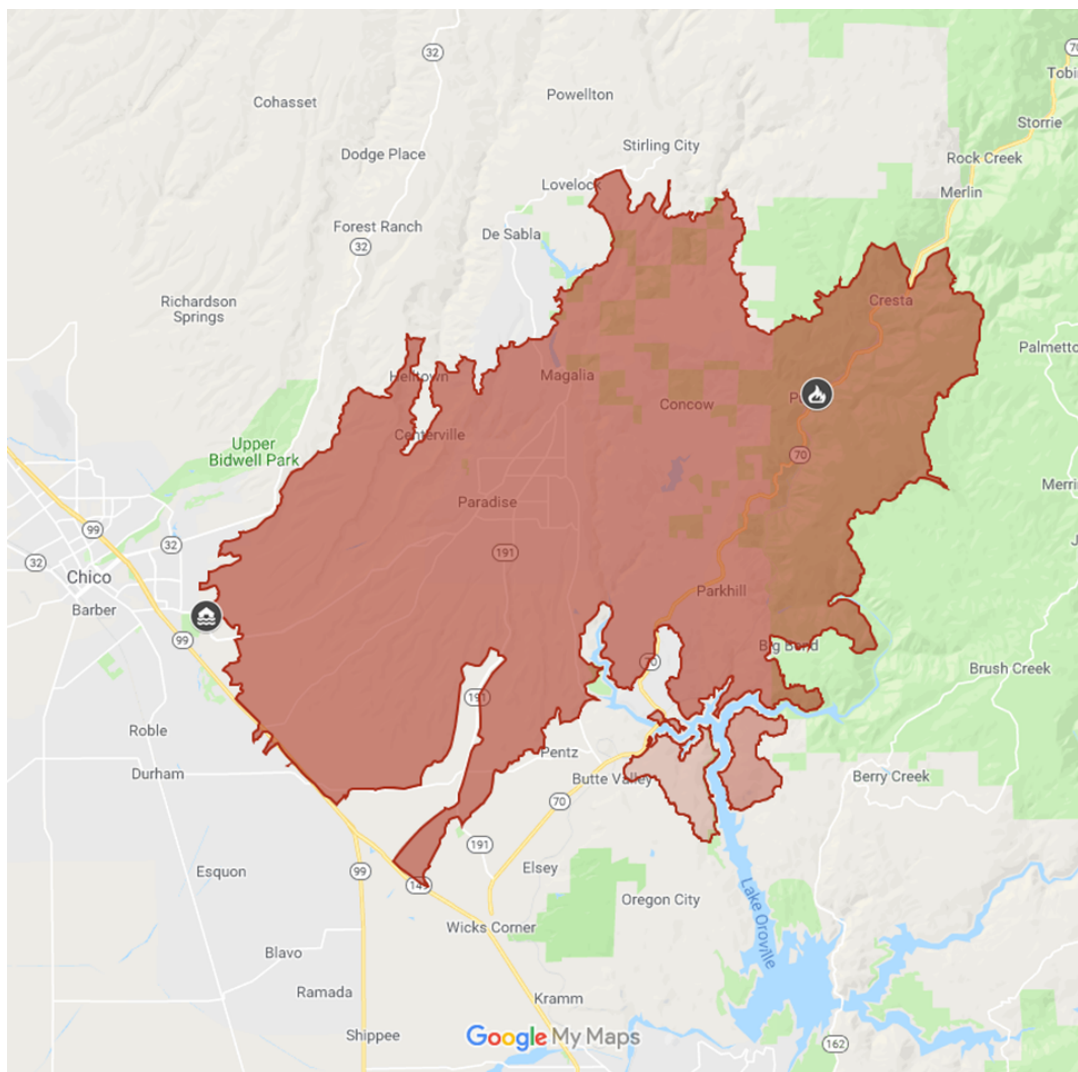
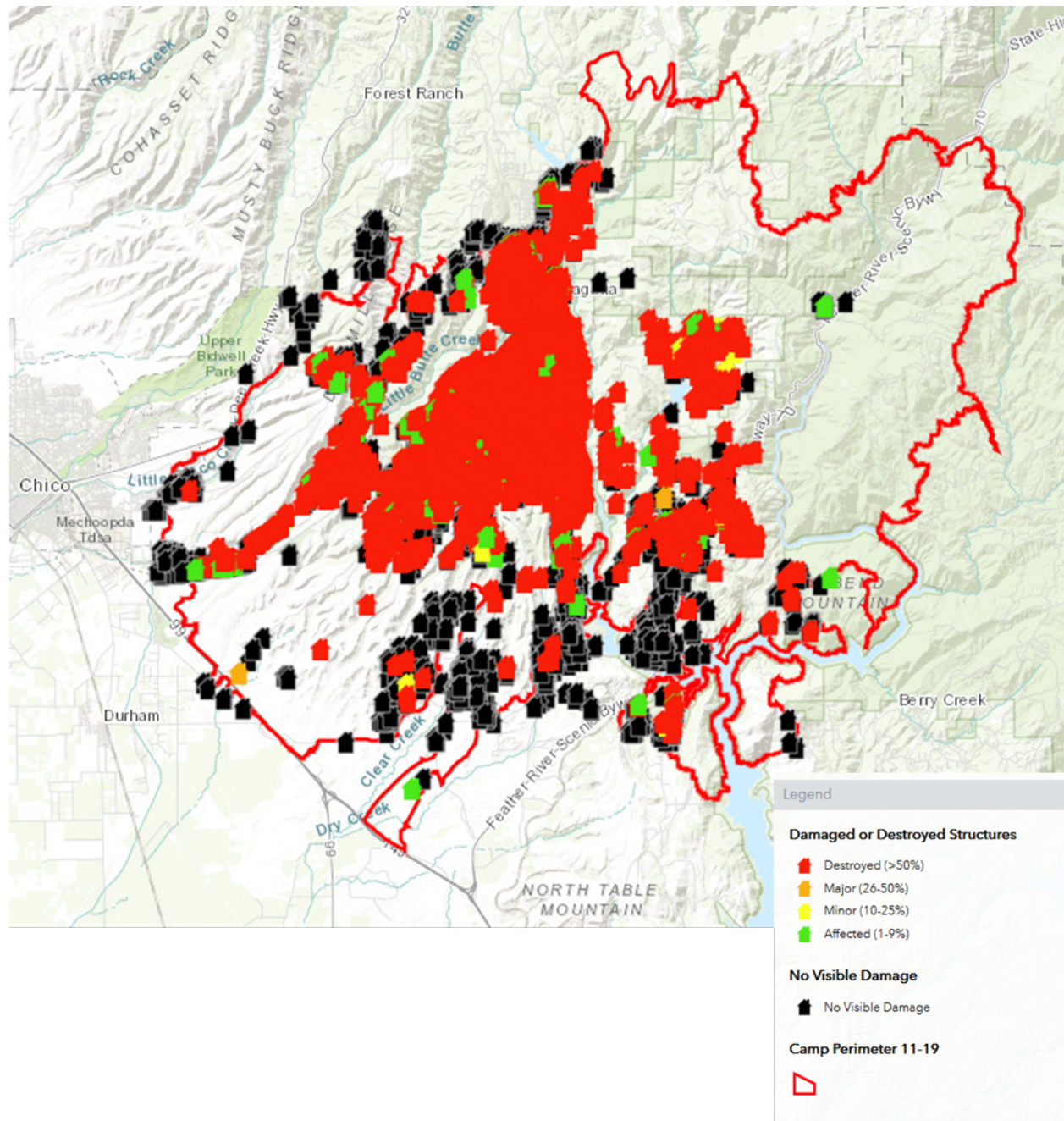


Figure 2. Camp Fire Structure Status Map as of December 13, 2018.



2.2 Site Eligibility

The intent of the structural debris removal program is to remove single family homes, residential structures, mobile homes, cabins, garages, shops, outbuildings, sheds, trailers, recreation vehicles (RVs), boats, vehicles, or other debris field deemed eligible by the State's IMT that pose a risk to health and/or the environment. The debris program does not cover structures smaller than 120 square feet, fencing, trees, vegetative debris, single vehicle with no other debris fields or structures, or other debris less than 10 cubic yards unless approved in advance by the State's IMT. The debris program also does not cover cannabis greenhouses or other

structures related to cannabis growing, drying, or processing. The program also does not cover illegal dumps, landfills, other disposal areas unless approved in advance by the State's IMT.

Depending on ownership, and zoning, certain condominiums, townhouses, co-ops, multi-family homes, apartments, and commercial structures and property may be eligible on a case-by-case basis. If these types of structures are within 1000 feet of a school, daycare, or other child care facility or next to a sensitive water course, they will have a higher likelihood of qualifying for the structural debris program; however, each non-single residential structure will have to have a separate application and must be approved by Cal OES before assessment can begin. All eligibility questions should be referred to Cal OES Recovery Division. *Figure 3 and Figure 4* provide a general summary of eligible for each category.

Figure 3. Wildfire Debris Removal Program General Eligibility Summary, Camp Fire 2018, Page 1 of 2 (Version 2).






Page 1 of 2

2018 Consolidated Wildfire Debris Removal Program

Type of Debris	Eligible for Removal	Not Eligible for Removal
Destroyed residential houses (Includes all out buildings on property)	✓	
Residential houses with significant damage (1 wall standing)	✓	
Residential houses with significant damage (more than 1 wall standing)		✗ May be eligible if it presents an immediate threat to life, public health or safety. This is determined on a case-by-case basis.
Partially damaged houses (with minimal damage)		✗
Occupant Owned Manufactured Housing Units (Mobile Homes)	✓	
Commercial / Rental Manufactured Housing Units (Mobile Homes)	✓	
Commercial structures	✓	

Figure 4. Wildfire Debris Removal Program General Eligibility Summary, Camp Fire 2018, Page 2 of 2 (Version 2).

2018 Consolidated Wildfire Debris Removal Program			Page 2 of 2
Type of Debris	Eligible for Removal	Not Eligible for Removal	
Combined use commercial and residential	✓		
Vehicles & Boats	✓ If on property where a home was destroyed / there is another structure that is eligible for removal.	✗ If in the public right of way, the county will remove / owner can have insurance remove.	
Destroyed Garage / Shed / Non-Commercial Barns / Play Structures and other Outbuildings where the residence is not damaged	✓ If it is over 120 square feet or more.	✗ If it is LESS than 120 square feet.	
Foundations (slab on grade excluding seismic piers)	✓ Foundations will be removed.		
Residential Swimming Pools		✗ The pool will be fenced.	
Driveways & Retaining Walls		✗	
Trees		✗ Not eligible unless they present a danger to workers.	
Patios		✗	
Seismic Piers		✗	
Wells		✗	
Basements / wine cellars	✓ Will be removed and fenced.		
Septic Tanks		✗	
Chimneys	✓		
Docks		✗ Not eligible unless it presents an immediate threat to life, public health or safety. This is determined on a case-by-case basis.	

2.3 Residential Debris Removal Right-to-Entry Permit

Butte County and the Town of Paradise will identify and work with each property owner to obtain legal authority to enter the property by obtaining an executed ROE. CalRecycle will not direct its consultants and contractors to perform assessment and debris removal work until provided with a fully executed copy of the ROE is received from Butte County. Once a ROE is executed, the owner will be notified within 24 to 48 hours before debris removal is started. Other steps such as assessment and asbestos removal will start without notification.

To participate in the State's coordinated debris program, the owner(s) must acknowledge multiple conditions from right-to-enter, insurance coverage, indemnification, and eligibility in the Right-to-Entry Permit (ROE). They must also acknowledge these following operational conditions:

- Access shall be granted for the duration of the project and all gate keys and codes must be provided.
- Owner(s) must allow removal of all structural foundations including shops, sheds, garages, and other outbuildings that contained burned structural debris. Retaining walls

that are greater than four feet and retaining natural soils will be left for erosion control purposes. Some stem walls and retaining walls along creeks, driveways, or terraces may be left on a case by case basis for erosion prevention purposes only, as approved by the IMT. It is the owner's responsibility to determine if the remaining structures left in place are structurally sound and can be used for rebuilding. Owners are advised to work with a licensed professional civil or structural engineer with the appropriate experience in fire damaged concrete structures to determine if the structure meets building codes.

- Driveways will be left in place unless destroyed by the removal operations. Sections of driveways where structural ash is present will be removed to the next concrete joint.
- It is the owner's responsibility to import soil to fill any depression(s) left on the property from the removal of foundation unless deemed eligible by the IMT for engineered fill for multiple burn foundation layers (e.g., A home that would build on a home that previously burned) or other extraordinary condition such as fire related contamination. Basements, wine cellars, or other preexisting conditions are not included in the engineered fill program.
- Soil sampling is part of the debris program to determine if the ash and debris removed no longer poses a public threat. In some instances, if soil samples do not meet the cleanup goals, additional soil will be removed from the debris footprint and more soil samples will be collected.
- Pumping and/or removal of wells and septic tanks/systems are not part of this program. Only septic tanks that are deemed to be hazardous by the IMT or built into the foundation or damaged during debris removal operation will be pumped.
- Large propane tanks that are leased by a gas company will not be removed through this program. Property owners must contact the gas company and arrange for them to pick up/remove their damaged tank. If tanks are owned by the property owner, they may be removed through this program. Small and medium tanks (less than 80 gallons capacity) will be removed.

Butte County and the Town of Paradise are working with CalOES and other federal and state partners in a program to facilitate safe removal and handling of burn debris and ash. To obtain this service the property owners must complete a Right-of-Entry form to allow these agencies to clean up your property. Additional information on the ROE and other local information can be found at <https://buttecountyrecovers.org/>.

Submission for unincorporated and incorporated areas (Town of Paradise) can be made at these locations:

Return via Mail

ATTN: Butte County Environmental Health
202 Mira Loma Drive
Oroville CA 95965

Return in Person

Disaster Recovery Center
Chico Mall, 1982 E. 20th Street in Chico
Hours: Monday - Saturday, 8 am to 6 pm

Right-of-Entry (ROE) Center (opening Monday, December 10, 2018)
202 Mira Loma Drive in Oroville
Hours: Monday - Saturday, 8:00 am to 5:00pm
ROE Phone: 530.552.3155

ROEs and be e-mailed to: ROE@buttecounty.net. A copy of the ROE form is provided in Exhibit C.

2.4 General Debris Estimates

Past debris removals have involved the removal of burn ash, recyclable metals, concrete, and contaminated soil from burned structural areas and vehicles. Based upon CalRecycle's experience on similar projects, typical quantities of materials generated from a residential property include 200 tons of debris and ash, 70 tons of concrete, 60 tons of contaminated soil, and 10 tons of recyclable steel. This is an average tonnage of all residential sites similar to the 2018 Camp Fire in Butte County and does not include commercial or larger properties such as ranches, homes greater than 3,000 sf, large debris field from residential business, or multiple homesites parcels.

2.5 Site Characterization

Based on past studies of burned residential homes and structures from large scale wildland fires, the resulting ash and debris from residential structures burned by fires can contain asbestos and toxic concentrated amounts of heavy metals such as antimony, arsenic, cadmium, copper, lead, and zinc. Additionally, the ash and debris may contain higher concentrations of lead if the home was built prior to 1978 when lead was banned from household paint in the United States. These heavy metals were revealed in the waste assessment studies from three major assessments: 1) "Assessment of Burned Debris Report for the 2003 Cedar and Paradise Fire Areas, San Diego County, California, (DTSC 2004)," 2) "Assessment of Burn Debris from 2007 Wildfires San Bernardino and San Diego Counties, California" (DTSC 2007), (<http://www.calepa.ca.gov/Disaster/Fire/>) and 3) Assessment of Burned Debris - 2015 Wildfires Lake and Calaveras County, California (DTSC 2015), <https://etp.ca.gov/wp-content/uploads/sites/34/2016/10/Disaster-Documents-2015yr-FireSample.pdf>. All of the reports revealed the residual ash has high concentrations of heavy metals that can be toxic and can have significant impact to individual properties, local communities, and watersheds if the ash and debris is not removed safely and promptly. All three reports also indicated the ash material may also be considered a California Hazardous Waste due to heavy metals such as lead.

While Executive Order B-57-18 suspends the statutes and regulations for the removal, storage, transportation, and disposal of hazardous and non-hazardous solid waste and debris resulting from Camp Incident in Butte County, the order does not suspend the handling requirements for toxic/hazardous ash debris under the Division of Occupational Safety and Health (DOSH), better known as Cal/OSHA. Worker safety statutes and regulations for handling ash with heavy metals such as lead and asbestos shall be followed.

Additionally, past CalRecycle removals have discovered significant amounts of asbestos in the residual debris. Residual materials can include; stucco, roofing, floor tile, linoleum, fireplaces, furnaces, vinyl tiles and mastic, sheetrock and joint compound, cement pipe, exterior home siding, thermal system insulation, concrete and mortar, and other building materials commonly used in homes built before 1985. While not as common, asbestos containing material has also been discovered on structural debris removal projects in homes built after 1985.

2.6 Known Hazards

The type and number of known hazards will depend on specific conditions of each site, such as how much of the structure is remaining, age of the structure, building materials used, and damage level of the site trees. If ash and debris are present, the site is expected to contain

elevated levels of heavy metals and possibly asbestos. If the house was built before 1980, the ash may contain very high levels of lead from lead-based paint and may also contain significant quantities of asbestos such as transite siding or insulation.

Based on past CalRecycle bulk asbestos surveys, Department of Toxic Substances Control (DTSC) preliminary hazardous waste assessments for asbestos, and the age of the structures, the Camp Incident will contain significant quantities asbestos containing materials (ACM). **All responders should be aware that ACM is present and that asbestos is a human carcinogen with no known risk-free levels of exposure.**

2.7 General Worker Safety

Employers performing cleanup and other work in areas damaged or destroyed by fire are required to identify and evaluate the potential hazards, correct any unsafe or unhealthful conditions and provide training and instruction to employees per California Code of Regulations, Title 8, sections 1509, 1511, 1518 and 3203. All work crews should look up and perform a 360° around the destroyed structures and trees within the work zone to ensure conditions are safe from power lines, dangerous trees, and other hazards.

Potential hazards in fire cleanup areas include, but are not limited to, the following:

Safety Hazards

- Fire and fire byproducts
- Electricity
- Flammable gases
- Unstable structures
- Demolition
- Sharp or flying objects
- Excavations
- Fall hazards
- High angle slope work

Health Hazards

- Carbon monoxide poisoning
- Ash, soot and dust
- Asbestos
- Hazardous liquids
- Heavy metals such as lead and mercury
- Other hazardous substances
- Heat and cold illness

Confinement Hazard

- Confined spaces from septic tanks, hand dug wells, and mine shafts

Fall hazards are present on sites with chimneys, partially remaining structures, and burned trees. Physical hazards (i.e., slips, trips, and falls) are also present from exposed foundations, glass, metals, and debris. Other hazards may be present if hazardous materials or medical wastes are discovered during the removal. Utilities (i.e., electrical, gas, cable, telephone, and sewer) are unmarked and must be accounted for during debris removal operations.

The weather may also pose hazards from excessive heat/cold, lightning, rain, snow, and high winds.

Site personnel shall operate vehicles and equipment in a safe manner to ensure safety of its employees and the public. Site personnel must pay particular attention to operations around local roads and take the necessary precautions. Site personnel must note the number of downed power lines, dangerous trees, chimneys, and underground utilities.

Since ash and debris contain elevated levels of heavy metals and/or asbestos, an exclusion zone will be set up around each site during removal activities. All personnel entering and leaving this area will be required to wear Level C protective attire during debris operation in the exclusion zone. Certain activities like soil sampling may have lesser requirements depending on the IMT health and safety requirements. . Site personnel should use designated eating areas and hand washing stations to reduce exposure. Additional health and safety requirements are discussed in Section 9.0.

3.0 INCIDENT MANAGEMENT ROLLS AND RESPONSIBILITIES

3.1 Incident Command Systems

The debris removal operation will operate in accordance with the Standardized Emergency Management System (SEMS), utilizing the ICS for field response. The ICS is the model management tool used in disaster response scenarios for the command, control and coordination of all agencies and/or private companies working on an incident. It is assumed for this incident that all personnel working on this incident has a basic understanding of ICS and has completed appropriate training such as ICS-100, ICS-200, ICS-700, and ICS-800. The IMTs will follow USEPA's Incident Management Handbook, January 2016.

Cal OES has created a debris task force under the Unified Command Group (UCG) to oversee the four state debris management teams (IMT 1, - 2, - 3, -4) for the 2018 wildfires (i.e., Camp, Hill, and Woolsey Incidents) that destroyed structures in California. IMT members will report to their respected IMT teams and will be assigned to either Operations or Plans Sections. Tables 1 through 4 provide the overall organizational structure. Figure 5 and 6 provides a general outline of the incident. The contractors will also mirror the ICS structure in their organizations and designate key positions from Divisions, Branches, Operations, Planning, Logistics, and Finance.

Table 1. Incident Command System (ICS) Organizational Structure		
Team Titles	Name	Responsibilities
Incident Commander	Butte County & Cal OES	Overall management, compliance, and County approval
Operations Section Chief	Cal OES / CalRecycle	Directs operations including establishing priorities, objectives, and worker health and safety
Planning Section Chief	Cal OES / CalRecycle	Collects, evaluates, and disseminates the tactical information and prepares incident action plans for Division and Task Force Leaders
Finance/Administration Chief	CalRecycle	Manages all financial, administrative, and cost analysis within the responsibility of CalRecycle

Table 2. Regulatory Agency Contacts

Agency	Name	Responsibilities
CalEPA - Department of Toxic and Substances Control (DTSC)	Adam Palmer/Nancy McGee	On-site review, clean up goal review and support of issues related to hazardous substances
CalEPA Office of the Secretary	TBA	Agency representative responsible for coordinating the overall emergency response at the agency level
Cal OES	Melinda Stehr	Agency representative, technical support for debris removal, oversight of field activities, and agency communication
Regional Water Quality Control Board, Region 1	TBA	Agency representative for providing document review and permit support with regards to water quality
California Air Resources Board (CARB)	Jeff Lindberg (Jeff.Lindberg@arb.ca.gov)	Agency representative for NESHAP Asbestos Notifications for demolition activities
Butte County Air Quality Management District (BCAQMD)	Jim Wagoner, APCO (air@bcqmd.org) (530) 332-9400	Agency representative for providing document review and permit support to air quality; implements program for Naturally Occurring Asbestos
Butte County Environmental Health	Tom Parker TParker@buttecounty.net	Agency representative for providing, location of septic systems, provide landfill permit support, hazardous waste support, and overall public health coordination

Table 3. Consultants and Contractors Team

Company	Name	Responsibilities
Consultant		
Prime: Tetra Tech	Chris Burns	Manage site documentation, background soil sampling, gross asbestos surveys and confirmation sampling, develop soil cleanup goals, air monitoring and sampling, confirmation sampling, and provide final reports. Provide personnel including Division Supervisors and Task Force Leaders, to oversee construction contractor crews and track debris removal operations.
Asbestos Surveys	Lona Pearson	Provide a Certified Asbestos Consultant (CAC) and manage asbestos surveying and sampling.
Debris Cleanup Contractor (Contractors A, B, C)		
Prime: ECC SPSG Ceres	Matt Long Don Barnes Kerry Kennedy	Manage the removal of debris and final erosion control.
Debris Crews	Task Force #	Removal of debris
Sub: Asbestos Removal	Per Contractor	Removal of asbestos wastes.
Sub: Trucking	Per Contractor	Trucking wastes and recyclables.
Sub: Disposal	Anderson Landfill, Recology Ostrum, Neal Road Landfill	Disposal of soil, ash, and other debris.

Sub: Metal Recycling	Odin Construction	Metal recycling and vehicle towing.
Sub: Concrete Recycling	Franklin Construction and Granite Construction	Concrete recycling.
Sub: Water Truck	Per Contractor	Provide water to each site and keep exposed ash wet prior to mobilizing to each site.
Sub: Street Sweeping	Per Contractor	Sweep community streets utilized by operations.
Sub: Erosion Control	Per Contractor	Provide erosion control.

Figure 5. General ICS Organization Chart for Area Command

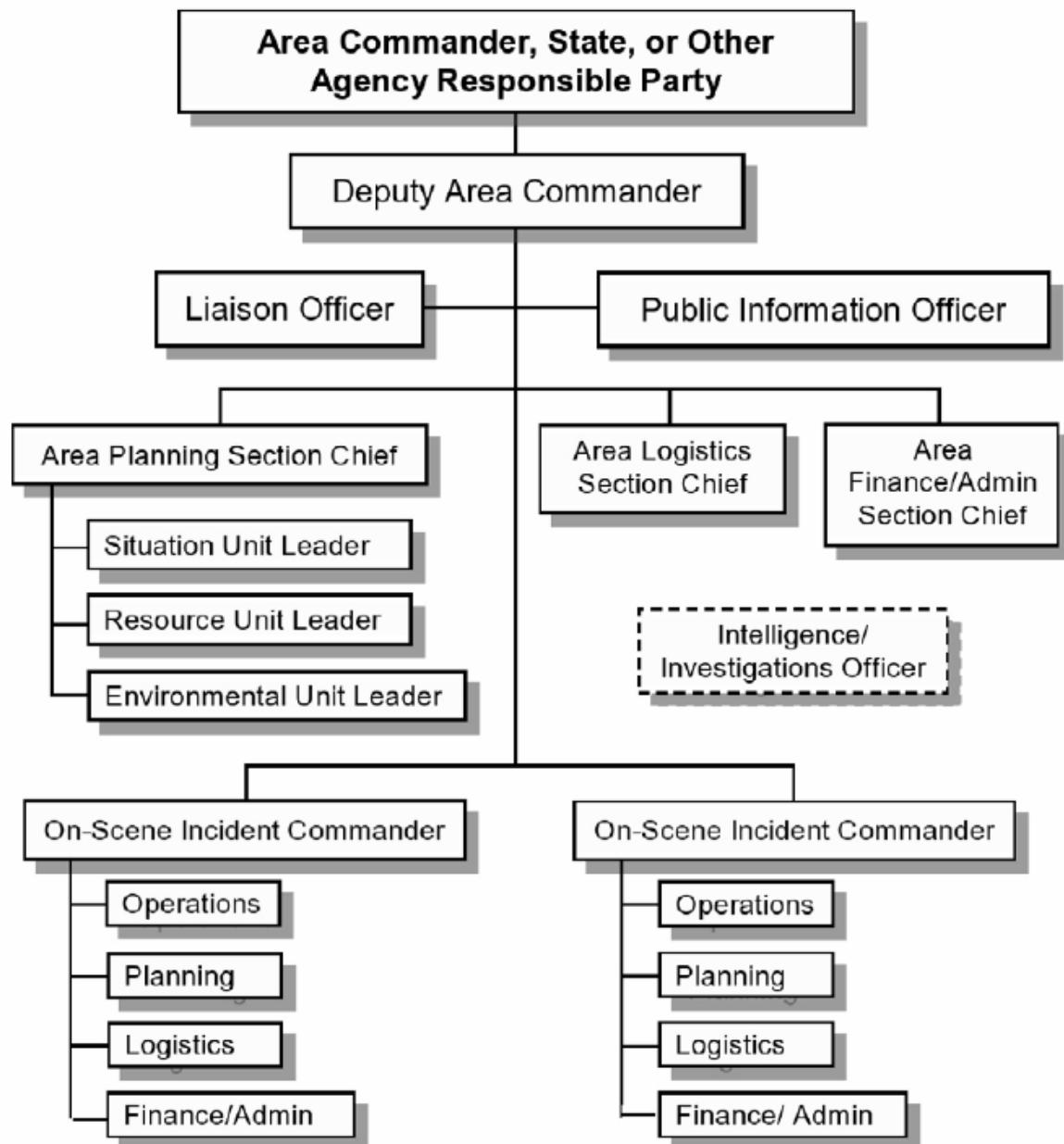
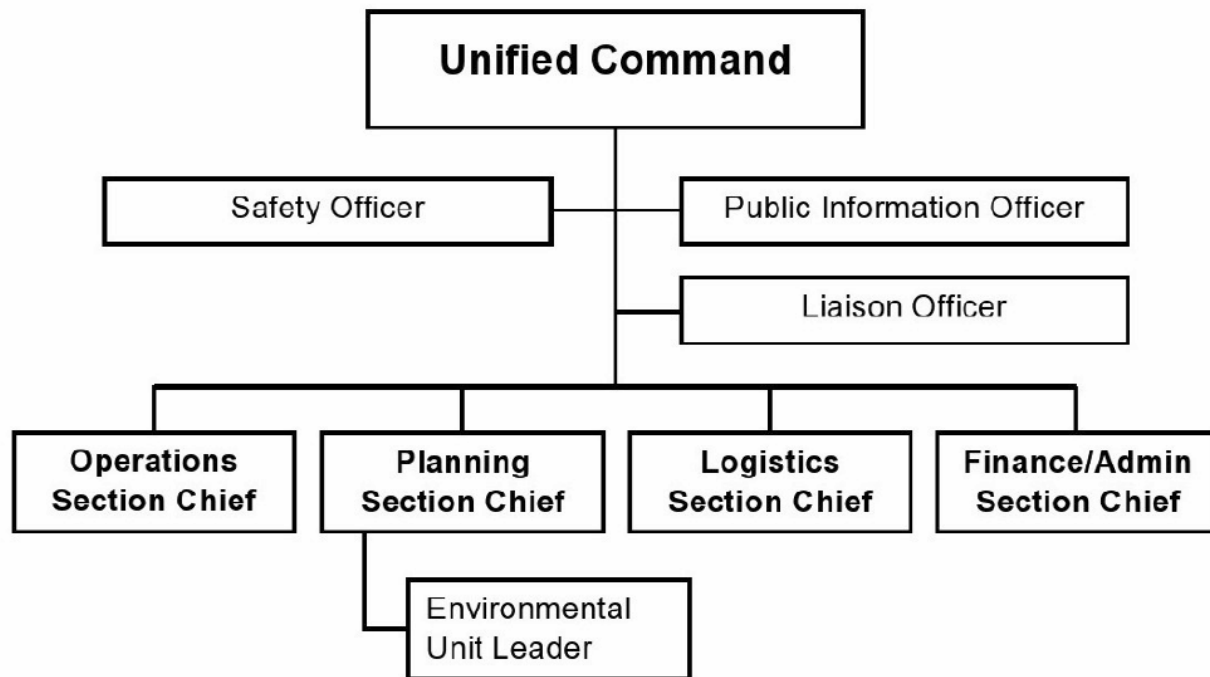


Figure 6. General ICS Organization Chart for the Camp Debris Incident.



3.2 Management of Contractor Resources

To manage removal debris crews, the IMT will follow the standard resource allocation and management structure under ICS for operations. Each debris crew will consist of the necessary contractor resources and one independent third consultant known as a Task Force Leader. The Task Force may also include a tribal monitor depending on the cultural significance of the property. This group of resources will be known as a Task Force. The IMT will order five like Tasks Forces from the same contractor and will be known as a strike team. Each Strike Team will begin at each operational period to ensure coordination. The Strike Team will be managed by a Division Supervisor and as the resources increase, a Branch Director, will be used to manage five divisions. This process will continue until the incident has the necessary resources to safely meet the objectives.

To properly identify incident resources all vehicles on private property will display a "DROC" sign provided by the IMT. Additionally, all personnel working outside the exclusion zone will display an identification badge indicating their name, contractor, and incident name along with a portrait photograph.

Each Task Force will also display a portable two side A frame sign with the assigned Task Force number to allow for emergency responders and trucking resources to easily locate each crew and so the IMT can visually track the crews from the road. For example, Contractor A Task Forces will be numbered from 1 to 99 and each Task Force will have a unique number. If the site

is located off a designed private or public road where the Task Force is not visible, the sign shall be placed at the entrance of the driveway. If the driveway is shared by multiple Task Forces then all the signs will be placed on one side of the common driveway out of the truck path. Table 5 provides the project identification and Task Force numbering for each contractor. Additional specifications for the Task Force Sign can be found in section 5.3.

Table 4. Project Identification and Task Force Numbering		
Contractor	Task Force Numbers	Resources
Environmental Consultant	NA	Display “DROC’ sign in all project vehicles
Contractor A	Task Force	Numbers 1 to 99
Contractor B	Task Force	Numbers 100 to 199
Contractor C	Task Force	Numbers 200 to 299

3.3 Debris Removal Site Documentation

The Planning Section Chief will develop an IAP for each operational period that defines work tasks for each Division Supervisors to implement and will be produced on an as-needed basis (may be as frequent as daily). The IAP will include a live link to a tracking sheet with project work assignments for each Task Force, Division Maps, and ICS documentation such as a 214.

Task Force Leaders will document activities for each individual site using the Collection Log. Photographs taken will be book-ended by photographs showing the site address, either by using the installed project sign or white board with full address if the project sign is not available. Resolution of each photograph shall have a minimum pixel of 1280x960 with a file size of 1 megabyte.

The Consultant will collect and organize all site documentation and will make the documentation available electronically through a web-based portal.

3.4 Project Cost Tracking

Project costs that can be directly attributed to each site will be tracked by CalRecycle and its contractors on a per site basis. Other costs that cannot be directly attributed to a site but are necessary, such as dust control (watering), street sweeping, community air sampling, and project management, will be considered a community cost. Any costs for community health and safety or monitoring activities associated with removal of structures, trees, debris or other features on public property will be estimated and approved by the Incident Commander and/or Operations Section Chief and will not be borne by private property owners.

4.0 DEBRIS OPERATIONS

4.1 Debris Removal Operation Center

The Camp Incident will have two disaster recovery centers (DRC) for the residents to connect with the resources needed to recover and rebuild. Local, state, and federal agencies along with community organizations will assemble to answer questions about disaster assistance.

Hours:

Operating Hours starting Sunday, December 9:

Closed Sundays

Monday - Saturday from 9 a.m. - 6 p.m.

The centers will also be closed on December 25, 2018, and January 1, 2019.

Locations:

Chico: Chico Mall (Former Sears building) 1982 E 20th St, Chico, CA 95928

Oroville: 2140 Feather River Blvd, Oroville, CA 95965

A Debris Removal Operations Center (DROC) will be established for managing day-to-day activities, answering questions from the public, and storing field supplies. The DROC will be equipped with office supplies, printers, internet access, and portable sanitary facilities. The DROC is not for the Contractor's day to day personnel and resources. The Contractor will need to locate a staging yard and independent office.

The DROC is located at 900 Fortress St. Suite 200, Chico, California and the main phone number is 530-399-0434.

4.2 Typical Debris Removal Sequence

Once a minimum number of ROEs are submitted, the IMT will select a set of properties to begin debris operations. Experienced debris crew will start in higher populated areas, while inexperienced debris crews will start in less populated areas to ensure the crews understand the process and dust is properly controlled. Once each crew is evaluated by the IMT, certain crews may be placed in areas requiring specialized work, such as steep slopes, narrow access, or high exposure potential. Priority for disaster teams will include the following:

1. Higher density homes such as Group Residential R1, R2, R3, R4 next to schools, daycares, or other public area.
2. Higher density homes such as Group Residential R1, R2, R3, R4 next to unburned residential and commercial properties.
3. Environmentally sensitive creeks and water courses.
4. Large number of ROEs in an individual neighborhood.
5. Rural areas next to unburned homes and water courses.
6. Other conditions as determined by the IMT.

4.3 Debris Removal Structure

Three prime contractors will be hired by CalRecycle to complete this debris project in Butte County, the project will be broken into the following general areas as shown in Table 5. Contractors may be required to work outside their specified zones per the IMT. To assist the

local government and residents with understanding where each debris crew is working, the incident will follow the same terminology as the Paradise and Butte County Fire Evacuation Zone Maps as shown in Figure 7 and 8. Contractor A (TBA) will be assigned all destroyed structures outside Paradise town limits, Contractor B (TBA) will be assigned zones west of Clark Road including but not limited to Zones 1, 2, 4, 5, 9, 10, and 11. Contractor C (TBA) will be assigned Zones 3, 6, 7, 8, 12, 13, and 14.

Table 5. General Work Zone for Prime Contractors		
Contractor	Area	Work Zones
Contractor A (TBA)	County of Butte	All areas outside the town limits of Paradise including minor areas of Zones 1, 3, and 8.
Contractor B (TBA)	Town of Paradise, west of Clark Road	Inside the town limits of Paradise in Zones 1, 2, 4, 5, 9, 10, and 11
Contractor C (TBA)	Town of Paradise, east of Clark Road	Inside the town limits of Paradise in Zones 3, 6, 7, 8, 12, 13, and 14

Figure 7. Camp Fire – Divisions Based on the Evacuation/Repopulation Map

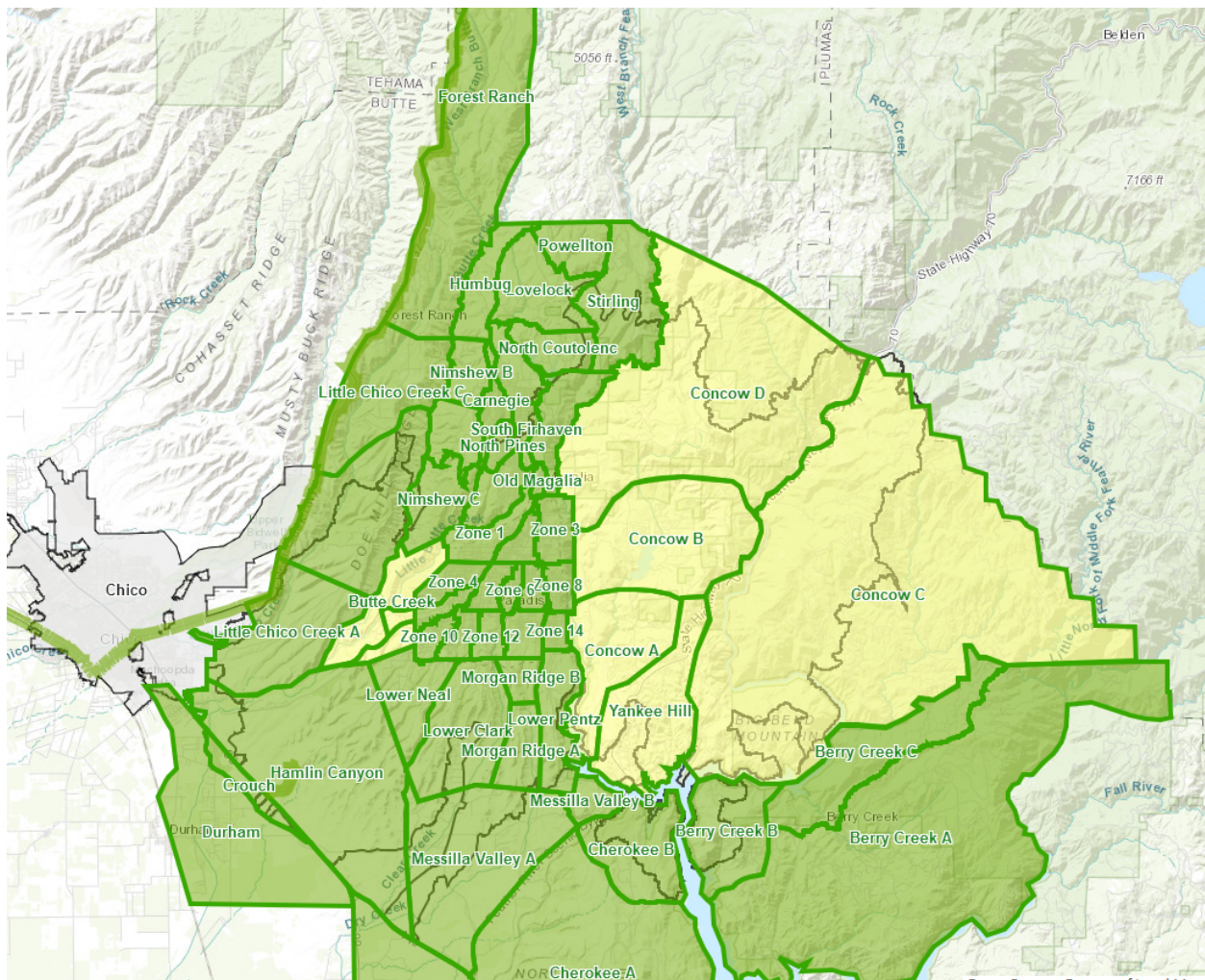
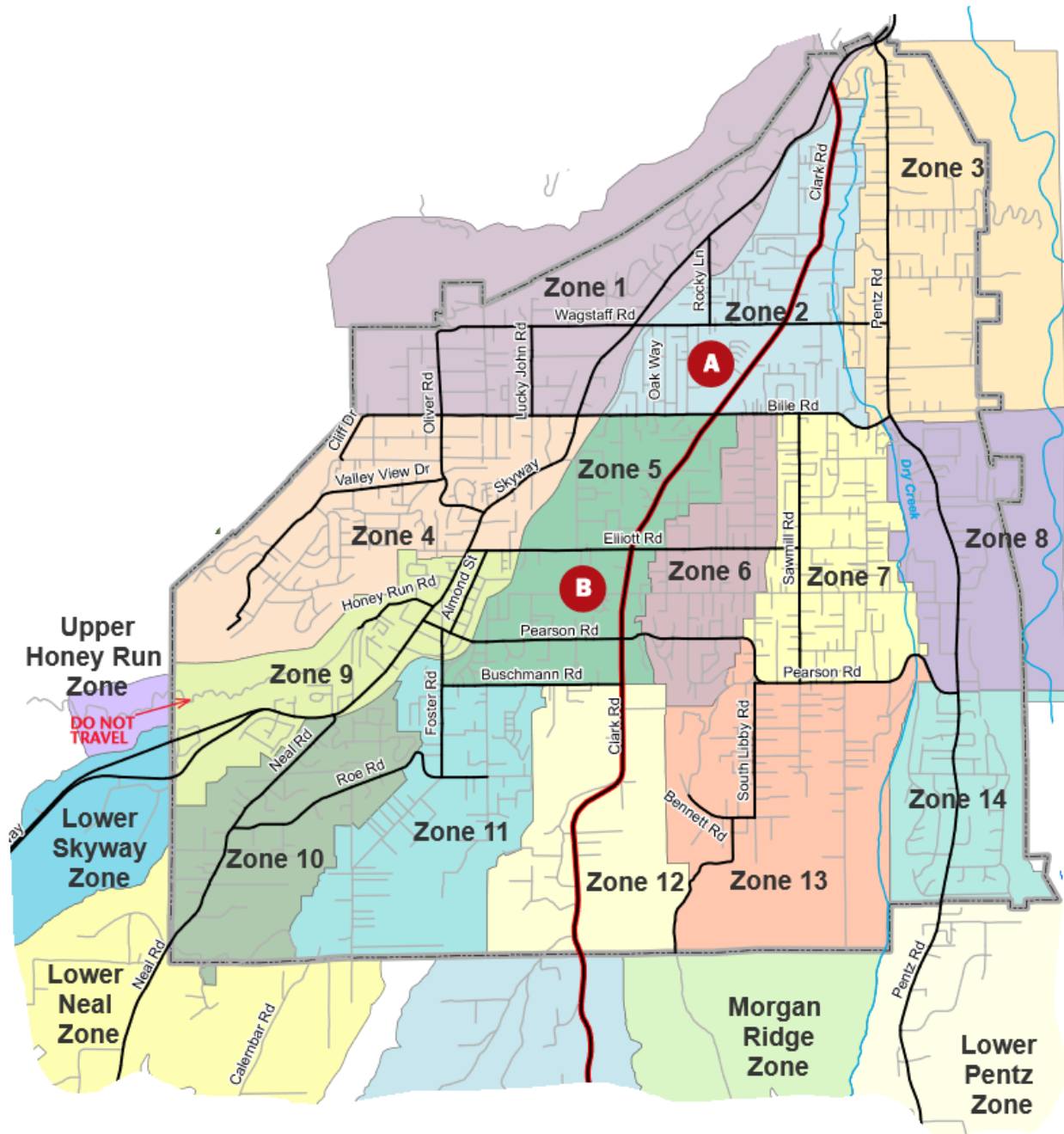


Figure 8. Closeup of the Divisions (Zones 1 to 14) for the Town of Paradise.



4.4 Debris Crews

The debris mission shall commence no later than January 30, 2019. Debris removal work will be authorized Monday through Saturday from the hours of 0700 to 1900 or as directed by the Incident Management Team (IMT). Every fifth Saturday will be a non-working day and considered a safety stand-down day. CalRecycle requires each Contractor to mobilize a minimum of two asbestos abatement crews and one chimney tipping crew within 48 hours of receiving a "Notice to Proceed" and initial Work Order and 15 debris removal crews to the project site within five (5) days of receiving the "Notice to Proceed" and initial Work Order. The Contractors working in the Town of Paradise must have the ability to increase by up to 135 debris removal crews (if necessary) for a potential total of 150 debris removal crews within 21 calendar days. The Contractor working outside the Town of Paradise must have the ability to increase by up to 35 debris removal crews (if necessary) for a potential total of 50 debris removal crews within 21 calendar days. All crews will be authorized and assigned by the IMT during each operations period in the IAP. Demobilization will be at the direction of the IMT and follow the same procedure as above. Before any debris removal work can start, an asbestos survey shall occur and bulk asbestos shall be completed as described in Section 5.7.

4.5 Contractor Stage Areas (TBA)

Each contractor will provide the location of their equipment/office stage areas and the staffing camps.

4.6 Debris Facilities

Tentatively the following facilities in Table 6 have been identified by the IMT for processing and disposal.

Table 6. Waste Destination Summary (Proposed)	
Material	Discussion
Ash, Debris, Soil	<p>Sites including but not limited to:</p> <p><u>Anderson Landfill</u> - Waste Management 18703 Cambridge Rd, Anderson, CA 96007</p> <p><u>Recology Ostrom Road</u> 5900 Ostrom Rd, Wheatland, CA 95692</p> <p><u>Neal Road Recycling and Waste Facility</u> 1023 Neal Rd, Paradise, CA 95969</p> <p>Additional ash and debris facility may be proposed by the prime contractors.</p>
ACM	<p>Anderson Landfill - Waste Management 18703 Cambridge Rd, Anderson, CA 96007</p> <p>Additional asbestos facilities may be proposed by the prime contractors.</p> <p>Asbestos removed by the Debris Removal Contractor's Specialty subcontractor will be transported and disposed per asbestos</p>

	regulations to an appropriate facility. The Asbestos Removal Contractor will use the USEPA Generator ID CAS 181114004 for all transported asbestos.
Metal Debris and Burned Vehicles, RVs, Trailers, etc.	All metal and vehicle will be transported to the preselected metal processing facility Odin Metal Processing, 3000 South 7 th Street, Oroville, CA
Metal Discards (Appliances)	Freon Extraction is REQUIRED for refrigerators not impacted by the fire. DTSC or Neal Road Landfill will remove refrigerant. Remaining metal will be recycled at the Odin Metal Facility in Oroville.
Vehicles and Trailers	Vehicles and/or hauling trailers that <u>did not sustain</u> damage or sustained only minor damage will be left on the property. These vehicles and/or trailers may be moved by the debris removal team to ensure worker safety, and as needed to complete the debris removal. Other damaged vehicles and/or trailers will be removed by the Contractor through a covered vehicle transporter or low bed.
Concrete	Concrete will be accepted at one of the two preselected facilities. 1. Granite Quarry, 4714 Pacific Heights, Oroville 2. Franklin Facility, 1019 Neal Road, Paradise
Tires	Tires will be disposed of per the IMT only. Location TBA
Household Hazardous Waste (HHW)	DTSC will collect and transport HHW. Additional HHW discovered by the cleanup crews will be staged and picked up by DTSC.
Human Remains	The IMT will coordinate with the County on the discovery of human remains. If human remains are located, the work will stop and the IMT will contact the County Sheriff Department. Due care of the remains will be taken.
Dead Animals	If dead animals are discovered, they will be disposed of in accordance with local restrictions with the ash and debris, unless directed by the property owner.
UXO (Unexploded Ordinance)	If UXO is discovered, IMT will notify the local Sheriff Department to arrange for proper disposal.
Radioactive Debris	All impacted lots will be screened for radiation before removal. If radioactive debris is encountered, the material will be removed and properly disposed of by DTSC.

4.7 Trucking Routes

CalRecycle and CalOES will generate a traffic management plan that details approved traffic routes to and from each facility. The routes shall minimize travel on secondary roads and use published truck routes and state highways when feasible.

5.0 DEBRIS REMOVAL

5.1 Overview of Operations

The operation will follow a systematic approach to removing debris off the property:

- Initial Site Reconnaissance
 - o Obtain, analyze, and evaluate background soil samples to establish cleanup goals for the project (Consultant)
 - o Identify water and electrical sources (Contractor)
 - o Identify equipment and material staging area (Contractor, Planning and Operations Section Chiefs)
 - o Identify disposal and recycling options (Butte County, Contractor, Planning Section Chief)
- Individual Site Assessments
 - o Check for underground utilities by alerting Underground Service Alert (USA) for public right of way (Contractor)
 - o Check for underground utilities by using an independent private utility locator service for private right-of-way, if necessary (Contractor)
 - o Identify septic tank and leach field locations on each property (Butte County, Consultant)
 - o Identify water wells on properties not serviced by the local water agency (Butte County, Consultant)
 - o Photograph each site from all sides to document all aspects of the property (Consultant)
 - o Sketch footprint and describe type of foundation(s) and other hardscape (Consultant)
 - o Sketch and record ash footprints (Consultant)
 - o Identify and photograph other property-specific hazards (i.e. swimming pools, large vehicles) (Consultant)
 - o Conduct surveys to identify, sample, and analyze results for suspected gross asbestos containing materials, including concrete foundations and mortar (Consultant)
 - o Conduct radiological and mercury sweeps (as necessary depending on geologic history of mining operations) (Consultant)
- Debris Removal
 - o Conduct Hazmat sweep of properties to identify and remove household hazardous waste (DTSC)
 - o Remove gross asbestos containing materials for properties where asbestos is found or suspected (Contractor)
 - o Initiate contact with property owners to notify the estimated commencement of debris removal activities (Consultant)
 - o Install individual address signs for each property with a signed ROE. This new sign will assist in the accountability and direct emergency services to the proper address (Contractor)
 - o Remove vehicles for recycling or disposal (Butte County/Standard Industries & SA Recycling)
 - o Collect, consolidate, and remove metals for recycling (Contractor)
 - o Collect, consolidate, and remove concrete for recycling (Contractor)
 - o Collect, consolidate, and remove ash, debris and soil for disposal (Contractor)

- o Track and log quantities and types of materials transported to landfill or recycling facility (Contractor)
- o Finish grading/smoothing ground surface (Contractor)
- o Track number of loads and type of material removed from each lot (Consultant)
- Confirmation Sampling
 - o Sample and analyze soil (Consultant)
 - o Compare soil results to cleanup goals (Consultant)
 - o If results exceed cleanup goals, another layer of soil will be removed, as directed by the Operations Section Chief, for disposal (Contractor) and the site re-sampled (Consultant)
- Implement Erosion Control
 - o If results are less than or equal to cleanup goals, the site will be prepared for final erosion control and certification (Contractor)
 - o Implement storm water best management practices to control sediment runoff from each remediated property, as identified by the Operations Section Chief or Consultant (Contractor)
- Documentation, Tracking and Consolidation
 - o Collect and organize debris removal documentation through web-based database (Consultant)
 - o Prepare site specific final reports for delivery to CalRecycle (Consultant)

5.2 Hours of Operation

All on-site debris removal work will be performed between the hours of 07:00 am to 07:00 pm, Monday through Saturday, in accordance with local noise ordinances. Crews may commence health and safety and end of shift briefings, which should not impact compliance with the noise ordinance, outside of those hours. Additionally, once each week, the Contractor and Consultant will be required to attend an all hands safety meeting at 6:30 am, at the Paradise Alliance Church (6491 Clark Rd. Paradise Ca). The Contractor and Consultant command staff will also be required to attend a planning and tactical meeting weekly at the DROC.

5.3 Crew Identification and Emergency Locations

To allow emergency responders and/or the IMT to quickly ascertain the location of the work force in the disaster zone where address signs and house numbers have been destroyed, the IMT will require all ROEs sites to have address signs. Additionally, each Task Force will also display a portable two-sided A frame sign with the assigned Task Force number to allow for emergency responders and trucking resources to easily locate each crew and so the IMT can visually track the crews from the road. If the site is located off a designated private or public road where the Task Force is not visible, the sign shall be placed at the entrance of the driveway. The address sign will be placed at the beginning of the driveway. If the driveway is shared by multiple Task Forces then all the Task Force signs will be placed on one side of the common driveway out of the truck path.

5.3.1 Address Signs

Depending on the number of ROEs, approximately 12,000+ reflective aluminum address signs will be required. The sign dimension should be 6 inches in width and 18 inches in height or length. The edges shall be rounded and free of sharp edges. The background shall be a

reflective green and all text shall be reflective white. Each sign shall be mounted on a 6-foot pre-drill, u-channel steel post or other post. The numbering for the address shall be 3 to 4 inches in height. The Environmental Consultant will be required to assemble each sign, while the Contractor will post each sign and notify USA 811 before installing. The Environmental Consultant will prepare a submittal with three bids for approval to the IMT before proceeding.

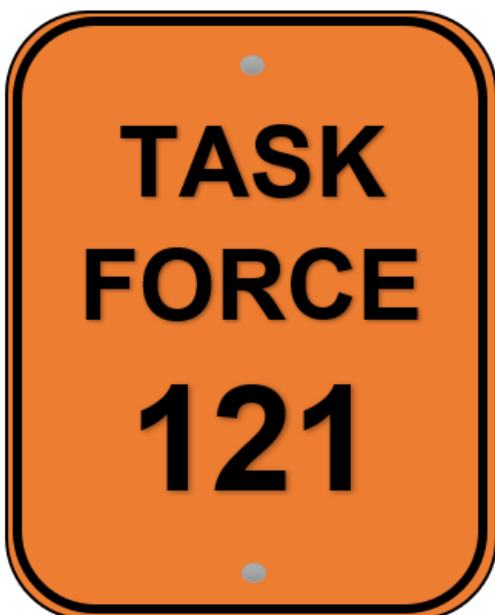
Address sign example (not to scale):



5.3.2. Task Force Sign

The Task Force sign will be constructed of rust-free, heavy gauge, durable aluminum with a reflective orange reflective sheeting with black outline, lettering, and numbering. The sign will have rounded edges with two mounting holes and measure 24 inches in length and 30 inches in height. In general, the lettering and numbering will follow a typical CalTrans specification for Speed Limit signs. The sign will be posted each day on an all-weather portable, two-sided A frame sign holder. CalRecycle will provide these signs.

Task Force sign example (not to scale):



5.4. Project Permits and Permission

Table 7 shows the following permits anticipated for the project.

Table 7. Summary of Permit Requirements		
Requirement/Permission	Entity Responsible for Obtaining	Comments
Property owner Site Access/ Authorization for Right-of-Entry	Butte County	Executed forms are required by owners before work can begin on their property.
California Environmental Quality Act (CEQA)	Exempt	Projects undertaken, carried out, or approved by a public agency to maintain, repair, restore, demolish, or replace property or facilities damaged or destroyed because of a disaster are exempt from CEQA. Public Resources Code, §§ 21080(b) (3), 21172; see also, 14 CCR 15269(a).
USA North 811	Contractor	48 hours notification is required.
Section 1610 Streambed Alteration Department of Fish and Wildlife (DFW)	IMT	Except for removal of dangerous burned trees. Typically, the project does not include work in, or through, a streambed. If a stream crossing is necessary to access and remove burned debris, CalRecycle will submit a Lake or Streambed Alteration Program Notification of Emergency Work Permit to DFW.
County and State Encroachment Permit	Contractor	Use of temporary trailers or storage units on County right-of-way will require submittal of an application.
County Demolition Permit	Waived	Butte County to issue a blanket permit to demolish all structures destroyed by the fire under this program.
Asbestos NESHAPs program CARB (asbestos@arb.ca.gov)	IMT and Consultant	CalRecycle's contractors will make appropriate notification to CARB for demolition of any remaining standing structures that fall under the requirement, as necessary.
Naturally Occurring Asbestos (NOA) BCAQMD	IMT	If working in a known NOA area or NOA is discovered, the IMT will notify the District (air@bcaqmd.org) and follow dust mitigation measures
Portable Equipment and Engine Authorizations CARB	Contractors	Operation under emergency order authorized by Form 40 (https://www.arb.ca.gov/portable/perp/records/perp_form40.pdf)
Septic Tank Destruction	Contractor and	C42 Subcontractor will fill out and submit

	Subcontractor with a C42 Sanitation System	the DECLARATION OF SEPTIC TANK DESTRUCTION permit to Butte County.
Traffic Control	Contractors	Debris contractors will supply necessary traffic control plans, signage, personnel, and equipment as appropriate per CalTrans and Butte County DOT requirements.

5.5 Water Sources

While dust control is paramount to controlling fugitive dust, heavy metals, and asbestos, water must be obtained from legal water rights. Water for dust control may be obtained from hydrants within the Town of Paradise, the County of Butte, and other independent water districts. These water hydrants will be equipped with a volume meter to monitor usage. The Contractor shall not use any other water supply system, river, stream, pond, or lake unless approved by the IMT due water rights, environmental concerns, and to the high fire danger.

5.5.1 Stream Crossings

Before any blue line stream is crossed with heavy equipment the Contractor will seek permission to proceed from the IMT.

5.6 Site Assessments

Each property will be assessed prior to debris removal as described below.

5.6.1 Property Assessments

Property surveys will include: apparent property lines, sketching the foundation and hardscape footprints, debris field footprints, and identifying property-specific hazards on a field data form. Oversized debris (i.e., burned cars, large appliances, water heaters, etc.), potentially hazardous materials (i.e., propane tanks, chemical containers, ammunition cases, etc.), and potentially hazardous conditions (unstable walls, exposed electrical lines, wells, cisterns, etc.) will be noted and mapped on the form. Photographs will be taken from each angle of the property and additional photographs should be taken to document hazards or other existing conditions.

5.6.2 Asbestos Survey

As part of disaster response, the Department of Toxic Substances Control (DTSC) will conduct an independent hazardous waste sweep for hazardous waste and potentially asbestos containing material (ACM) for destroyed structures in impacted areas prior to commencement of debris removal operations. DTSC will remove suspected bulk ACM where both operationally and financially possible. DTSC asbestos removal protocols do not include laboratory confirmation of ACM. DTSC will evaluate potential ACM based on a Certified Asbestos Consultant's opinion and remove the suspected ACM. CalRecycle and DTSC will coordinate on the remaining ACM and other hazardous waste issues as the removal project proceeds. Some delays may be incurred during the pickup of additional hazardous waste.

5.7 Asbestos Assessments and Removal

Asbestos is a naturally occurring fiber which is commonly found in ultramafic and serpentine rock. Flooring, sliding, ceiling and roofing tiles were commonly made with asbestos. Asbestos-containing cement was used in building materials because the fibers provided strength without adding much weight. Its insulating and fire-resistant properties also made the mineral an ideal

substance to add to cement. Asbestos fibers can be released into the air when they are broken or crushed through man-made or natural processes. Asbestos has been identified by the State as a toxic air contaminant. Inhalation (breathing) is the main route of exposure and may cause lung cancer or cause other health hazards which may not become apparent until after many years.

Based on past CalRecycle bulk asbestos surveys, and Department of Toxic Substances Control (DTSC) preliminary hazardous waste assessments for asbestos, and the age of the structures, the Camp Incident will contain significant quantities asbestos containing materials (ACM). Additionally, Naturally Occurring Asbestos (NOA) may be found in some areas of the Camp Incident, primarily in the Paradise/Magalia interface, Concow and Yankee Hill regions.

Recent residential debris cleanup activities by CalRecycle and DTSC have identified inconsistent interpretation of policies and regulations for conducting emergency debris removal actions throughout the State. The main issue is whether or not structural ash and debris from a wildland fire or other large-scale disaster should be treated as ACM under the National Emissions Standards for Hazardous Air Pollutants (NESHAP) due to the assumption that the ash and debris may contain asbestos. DTSC currently classifies ACM as hazardous waste if the waste contains more than one percent (>1%) friable asbestos. Some California Air Quality Management Districts (AQMD) have determined all ash and commingled debris from a structural fire event should be managed as a California hazardous asbestos containing waste in accordance with the federal asbestos NESHAP and local air quality regulations. However, other air districts have not mandated this requirement and have cited the NESHAP exemption for single family homes or if the structure has been totally destroyed by a natural disaster. Varying requirements have resulted in inconsistent cleanup and waste disposal practices for local governments and property owners throughout the state during disasters.

Since Butte County is in one of 16 of 35 non-delegated local air districts (Figure 9), CalRecycle will request a consultation on how the asbestos containing waste in the fire disaster zone will be handled. CalRecycle will submit its "California Wildfire Asbestos Survey" SOP for wildfire damaged structures with asbestos to the California Air Resources Board for review and to the Butte County Air Quality Management District for informational purposes only.

Figure 9. Delegated and Non-Delegated Districts



5.7.1 California Wildfire Asbestos Survey Standard Operating Procedure

To reduce the exposure risk from bulk asbestos to the debris removal workers; incident management personnel; nearby residents and neighbors in the community; and others handling, transporting, and disposing of the debris, the IMT and its consultants during the past five years of debris response have developed a standard operating procedure (SOP) for fire related asbestos issues. This SOP known as the “California Wildfire Asbestos Survey” is more stringent than the current federal NESHAP requirements and was developed by Certified Asbestos Consultants (CAC), Certified Site Surveillance Technicians (CSST), and Certified Industrial Hygienists (CIH) with thousands of hours of field response. The California Wildfire Asbestos Survey presents procedures to identify, remove, and properly dispose of bulk asbestos from residential structures damaged by a wildfire.

The California Wildfire Asbestos Survey will be followed during a coordinated structural debris removal conducted by CalRecycle and its consultants and contractors. This SOP will be used to establish minimum procedures to verify that the precision, accuracy, completeness, comparability, and representativeness of all data collected throughout the project duration is acceptable; and to ensure that all information and decisions are technically sound and properly documented to identify and remove bulk ACM. Appendix A contains the California Wildfire Asbestos Survey SOP.

Some of the key best management practices for removing ACM include:

- The CAC or CSST will consult with a licensed asbestos removal contractor to identify the location and area of ACM to be removed.
- A registered Asbestos Removal Contractor will oversee and remove the ACM identified on-site by the CAC.

- All on-site personnel removing ACM must have received the necessary health and safety training for conducting asbestos removal activities pursuant to Occupational Health and Safety Administration (OSHA) 1910.100, and CCR Title 8, Section 5192, and will be required to wear Level C personal protective equipment (PPE) when working in the exclusion zone.
- All gross ACM that can be safely and easily removed from the site will be adequately wetted prior to being bagged to meet the NESHAP leak-tight requirement for removal. At a minimum, the plastic bags must be of at least 6-mil thickness, and the contents must remain wet.
- If bulk loading of ACM is utilized, the bin or container used for transport (e.g. end-dump trailer or roll-off box) will be tarped before transport. In addition, each load will be double-lined with 10-mil ply in such a way that once loaded, both layers can be sealed up independently as required by the landfill.
- All ACM must be sufficiently wetted in advance of initiating removal of the material. The water shall be applied in a manner so not to generate significant runoff.
- ACM removed from the property must be manifested and transported for disposal by the Asbestos Removal Contractor. An EPA Generator ID number of **CAS 181114004** has been assigned to this incident.

5.7.2 Naturally Occurring Asbestos

Since NOA may be found in some areas of the Camp Incident, primarily in the Paradise/Magalia interface, Concow and Yankee Hill regions, the BCAQMD website has an NOA map where generally NOA is found in Butte County (www.bcaqmd.org).

The CARB's Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining requires the BCAQMD to implement a program to protect the public from the potential exposure to NOA from construction, grading and similar activities. The NOA-ATCM requires dust mitigation measures, primarily water spray, tarping, and track out controls, to minimize dust emissions and prevent visible dust from crossing property lines. If areas to be disturbed are greater than one (1) acre, the ATCM requires a Dust Mitigation Plan be submitted to the air district. BCAQMD has reviewed the proposed dust mitigation measures in this DROP and determined the DROP suffices for the required Dust Mitigation Plan, if all the requirements are followed. The ATCM requires BCAQMD be notified of work on project sites containing NOA or where NOA is discovered. BCAQMD will accept email (air@bcaqmd.org) or fax ((530) 332-9417) notifications, including compiled lists of projects sites/addresses where earthwork will be performed with estimated work dates.

If contractors are working within an area identified as having NOA, the dust control measures in this plan and noted below must be followed to comply with the requirements of the ATCM, unless a registered geologist evaluates the site and determines NOA is not present. For sites that have identified NOA present, these additional requirements shall be implemented based on weather conditions and amount of precipitation:

- If native soils become dry and visible dust is present then unpaved roads, parking lots, and staging areas shall be watered every two hours during active operations or other stabilization measures to prevent visible dust.

- Operations shall be suspended and disturbed areas stabilized if wind speeds are high enough to generate visible emissions while dust mitigation measures are being implemented.
- Implement additional track-out controls prior to exiting the property such as gravel pads, tire shakers, wheel wash systems, additional pavement, or other effective measure to minimize track-out.
- If work is on a known NOA site is interrupted and discontinued for more than 1 week, stabilize disturbed areas and storage piles by wetting, tarping or other effective measure to minimize emissions while inactive. Application of a temporary hydro mulch may be necessary if approved by the IMT.

5.8 Air Monitoring

Prior to commencement of debris removal, air monitoring samples will be collected by the Consultant within the footprint of the Camp Incident to establish project baseline levels for air contaminants, including particulate matter, airborne metals and asbestos. Once debris removal commences, ongoing air monitoring in the community and at the job sites will be performed as outlined in the Air Monitoring Plan (*Appendix D*).

Methods for air monitoring work areas and fixed facilities are as follows:

- Fugitive Dust – United States Environmental Protection Agency (USEPA) approved equivalent methods for particulate matter 2.5 microns or greater in diameter (PM-2.5) and/or particulate matter 10 microns or greater in diameter (PM-10) monitoring
- Heavy Metals - National Institute for Occupational Safety and Health (NIOSH) Method 7300, Metal Scan (California Title-22 Metals-CAM 17 excluding mercury)
- Asbestos - NIOSH Method 7400 and 7402, Low Volume

Methods for air monitoring community sites are as follows:

- Fugitive Dust – United States Environmental Protection Agency (USEPA) approved equivalent methods for particulate matter 2.5 microns or greater in diameter (PM-2.5) and/or particulate matter 10 microns or greater in diameter (PM-10) monitoring
- Heavy Metals –
 - U.S. EPA Compendium Method IO-2.1, Sampling of Ambient Air for Total Suspended Particulate Matter (SPM) and PM10 Using High Volume (HV) Sampler
 - U.S. EPA IO Compendium Method IO-3.5: Compendium of Methods for the Determination of Inorganic Compounds in Ambient Air: Determination of Metals in Ambient Particulate Matter Using Inductively Coupled Plasma/Mass Spectrometry (ICP/MS)." EPA/625/R-96/010a
 - U.S. EPA 40 CFR Part 50, Method for the Determination of Lead in Total Suspended Particulate Matter.
 - U.S. EPA 40 CFR Part 58, Appendix E: Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring
 - Standard Operating Procedures for Lead Monitoring Using a TSP High Volume Sampler
- Asbestos – International Organization for Standardization (ISO) Method 10312, "Ambient Air – Determination of Asbestos Fibers – Direct Transfer Transmission Electron Microscopy Method.", Low to High Volume

Additional air monitoring may be required depending on site conditions such as mercury, hexavalent chromium, silica or other mining wastes. All air samples will be verified by Level 2 Verification. All Fixed Facility and Community locations will be Level 4 validation.

5.9 Radiological Monitoring

While it is unlikely that radiological debris will be found, based on past debris removals, radiological surveys are necessary to prevent exposure. CalRecycle's Consultant shall perform a radiological survey around destroyed structures. Survey equipment should be designed for general radiological surveying such as a Ludlum 2241 or equivalent. CalRecycle can provide the calibrated radiological equipment if necessary.

The action level for this project is set at two times background. Should a level of 2x background be detected, the surveyor will isolate (i.e., cordon off) the area and notify the Operations Section Chief. The elevated reading(s) will be traced until the source is determined to be due to natural sources such as brick or geological formations or other radiological debris. Should the reading not result from natural sources, the Operations Section Chief will determine the location and rate and develop an action plan to secure the source as long as the reading does not exceed one milliroentgen per hour (1mR/hr) at one foot.

5.10 Notifications

The following notices will be made prior to start of the project, at a minimum:

- Underground Services Alert (USA) will be notified at least 48 hours prior to any excavation.
- CARB Asbestos NESHAP Program will be notified of any demolition of a partially destroyed structure within one working day. A notification form is provided as *Exhibit H*.
- NOA site the IMT will contact the BCAQMD by email (air@bcaqmd.org) or fax ((530) 332-9417) of work to be performed.
- Local fire department will be notified prior to commencement of work.
- Local utility providers (i.e. water, sewer, power) will be notified prior to removal of any damaged structure to ensure the utilities are secure and off.
- Conduct underground utility survey by a private contractor on private property if necessary.

5.10.1 Colored Hazard Marking

After wildfires, structural debris can blend in with potentially hazardous substances. In an attempt to visually communicate hazards in the field, the guide shown in Table 8 will be used to indicate if a hazard is or is not visually present and provide other critical USA underground markings. See the color chart from USA North – 811 for further information (<http://www.usanorth.org/USAColorBrochure.pdf>). Each Task Force Leader will determine if any member has color perception issues.

Table 8: Hazard Marking Colors for Debris and USA North	
Debris or Potential Hazard	Spray Paint Color
Household Hazardous Waste (HHW), Battery, Tank, Cylinder	Bright Neon Orange
Possible ACM	Bright Neon Pink
Material Safe for Normal Disposal	White/Bright Neon Green
USA Markings for Proposed Excavation	White
USA Markings for Gas, Oil, Steam, Chemical	Yellow
USA Markings for Electric Power Line	Red
USA Markings Sewer and Storm Drain	Green
USA Markings Telephone and Cable	Orange
USA Markings for Water	Blue
USA Markings for Reclaimed Water	Purple



Photo: DTSC household hazards waste sweep in Paradise, CA. Note: Marking – White safe to dispose.

5.11 Household Hazardous Waste Identification and Removal

DTSC completed a survey of the homes and removed visible hazardous waste. However, based on past experiences, additional household hazardous waste still exists under the debris. If the removal team identifies hazardous waste or discovers a questionable item, it will be marked as hazardous with bright orange spray paint to be checked by a qualified individual. If the qualified individual does not deem it a hazard (e.g., propane tank without a valve), then the item will be marked with bright green spray paint with the words "O.K.," or two stripes indicating whether the item is to be removed as debris or recycled. If the item is deemed hazardous, the waste will be segregated by the removal team to a temporary on-site storage. DTSC will collect and transport the hazardous waste to an appropriate facility at no charge to the State.

5.12 Appliance and Vehicle Recycling

Materials that must be removed from appliances and vehicles prior to crushing, baling or shredding for recycling include, but are not limited to:

- Used oils as defined in Article 13 of Chapter 6.5 of the Health and Safety Code (includes engine oil, lubricating fluids, compressor oils, and transmission oils)
- Fuel
- Chlorofluorocarbons, hydrofluorocarbons, and hydrochlorofluorocarbons used as refrigerants
- Polychlorinated biphenyls known to be contained within motor capacitors and fluorescent light ballasts
- Sodium azide canisters in unspent automobile air bags
- Antifreeze in coolant systems
- Mercury that may be found in thermometers, thermostats, barometers, electrical switches, and batteries

Records detailing removal and disposal operations involving all such materials will be recorded and manifested.

Appliances that were completely consumed by the fire will likely not contain any of the above items. Appliances will be treated as metal debris and removed accordingly. Vehicles will be removed from the site and checked/processed for fluids before shipment to the recycling facility.

5.13 Storm Water Protection

Best management practices will be employed to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges. Potential sources of sediment from cleanup activities include vehicle tracking, exposed soil and slopes, export operations, disposal operations, and ash-filled topsoil stripping and stockpiling. Authorized non-storm water discharges anticipated for the project include water used to control dust, potable water, and uncontaminated excavation dewatering.

Best management practice guidelines include, but are not limited to, the following:

- Water to Control Dust: Dust control will be implemented on all debris removal sites when there is visible dust generated from the site using fire-grade nozzles or small diameter (3/4" to 1") fire hose, or with a water truck depending on the area being serviced. Water to be used for dust suppression may only be from designated areas. While the goal is to

apply water spray for dust control to avoid surface run off, **dust control shall take precedence**. In the event there is significant surface run off, the Contractor will control runoff with best management practices.

- **Good Site Management/Housekeeping**: Good site management measures include cover or berming of loose consolidated materials that are not actively being removed; storing any chemicals in watertight containers; control of off-site tracking of loose soils; preventing disposal of rinse or wash waters into the storm drain system; ensuring containment of sanitation facilities; cleaning or replacing sanitation facilities by inspecting them regularly for leaks; and inspecting and keeping equipment in good working order to prevent leaks.
- **Vehicle Washing or Decontamination**: Wash vehicles in a manner as to prevent unauthorized non-storm water discharges from reaching storm drain systems.
- **Street Cleaning**: Street cleaning must collect tracked out sediment and prevent unauthorized non-storm water discharges from reaching storm drain systems. A street sweeper capable of collecting particulates of 10 microns (PM-10) will be used.
- **Street Cleaning at NOA sites**: Street cleaning must be performed by wet sweeping or HEPA filter equipped vacuum device.
- **Sediment Controls**: Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water. Best management practices include the use of silt fencing, fiber rolls, and street sweeping to prevent sediment migration. All materials shall be certified weed free in an effort to control the spread of noxious weeds. Sufficient quantities of temporary sediment control materials will be maintained on site throughout the duration of the project to allow implementation of temporary sediment controls in the event of significant rain.
- **Run-on and Run-off Controls**: Run-on and run-off will be managed within the immediate vicinity of the home site being worked on.
- **Public Right of Ways**: Butte County will be responsible for all storm water protection on public right of ways.

5.14 Debris Removal

Debris removal will be conducted on each site in the following order:

1. Drop standing chimneys down to ground level. The Operations Section Chief has determined that all standing chimneys pose a health and safety risk to the debris removal team. All standing chimneys will be taken down with proper dust control and inspected for asbestos containing materials.
2. Segregate and remove all metals from the site.
3. Remove ash and commingled debris from the site.
4. Remove fire damaged concrete foundations, within the former footprint, from the site.

5. Remove 3 to 6 inches of residual soil from debris site for disposal. Note: Straight edged bucket or a steel beam should be used on the final scrape to prevent the pushing the ash and debris into the soil from the teeth on a standard excavator bucket.

5.14.1 Additional Debris Removal Specifications

- All removal equipment should have glass enclosures and have an operating weight less than 60,000 pounds. It is recommended the Contractor use the largest available excavator under 60,000 pounds for production and to remove concrete. While equipment larger than 60,000 pounds may be used, the goal is to use equipment that minimizes the impact to the local roadway while completing the removal efficiently. For example, excavators should be smaller than or equal to a 325 Caterpillar or equivalent and front-end loaders should be smaller than or equal to a 950 Caterpillar or equivalent. The use of smaller equipment may also be necessary depending on site conditions such as slopes or tiered structural areas. Additional costs may be authorized for special site conditions; however, concrete breakers or delays in production will not be compensated if the Contractor decides to use smaller equipment than recommended.
- All waste material that is not loaded out at the end of each workday should be consolidated, sufficiently wetted, and/or covered to prevent the offsite migration of contaminants.
- All loads shall be covered with a tarp; this includes soil, metal debris, and concrete. Ash, soil, and debris loads will be placed in a plastic liner before covering with a tarp. All tarps will be tied down to the truck bed to prevent the plastic liner from releasing from the bed. Automatic tarps are not to be used on this project and damage claims to auto tarps will not be accepted.
- Heavy equipment operating on sites with naturally occurring asbestos shall be decontaminated prior to travel on a public roadway.

5.14.2 Dust Control

All burn ash and debris must be thoroughly wetted 48 to 72 hours in advance of removal activities. Water shall be applied in a manner so not to generate significant runoff yet applied long enough to soak into the ash and debris to minimize dust. A water fog will be used during debris handling and waste loading operations utilizing a fire grade firefighting nozzle with shut off valves for dust control. The fire nozzle shall have sufficient water pressure to generate a high mist fog stream. The fire nozzle should have an adjustable flow rate, preferably 20 to 60 gallons per minute, and be constructed of hard coated aluminum with brass and stainless-steel internal components. The ash, soil, debris, and concrete shall also be wetted while being loaded into trucks to prevent visible dust from crossing property lines. Dust control during the operations may not be necessary depending on precipitation and weather conditions.

5.14.3 Concrete Foundations and Slabs

Existing footings, slabs, and foundation systems in fire-destroyed buildings should not be and/or not typically permitted for re-used. The effects of intense heat and fire on a foundation system renders the foundation unusable, or impractical for re-use. A long burning house fire can generate enough heat to damage and weaken the concrete and steel reinforcement bars in footings, slabs, and footing stem walls. Even though concrete is non-flammable and offers fire protective qualities for preventing the spread of fire, it loses most, if not all of its structural strength characteristics when exposed to extreme heat for a long period of time.

Foundation anchorage hardware (steel bolts and hold-down anchors) are typically lost or severely compromised during a serious fire and cannot be replaced or repaired without significant expense. Installing replacement anchors in an existing footing is labor intensive and requires special inspection during installation, which can add substantial cost. Replacement anchors for hold down hardware must be re-engineered and are difficult and expensive to install in existing concrete footings. Plumbing pipes and electrical conduit embedded in the concrete is usually destroyed or heavily damaged during a fire. Repairs and replacement of pipes and conduit in existing foundations involves the removal and replacement of portions of the concrete that encapsulates them, which further compromises the concrete. This process usually involves the saw-cutting or jack-hammering out those portions of concrete containing pipes and conduit, removing and replacing the damaged pipes and conduit, and pouring the replacement concrete. This task becomes dangerous when dealing with a post tension slab damaged by a fire. Additionally, moisture barriers placed under concrete slabs can be destroyed or damaged by heat and fail to prevent water from impacting the structure.

Older foundation systems typically do not meet today's structural design requirements for earthquake safety or wind loads. This is especially true in cases where the original building was constructed prior to 1974. Current State Codes require that new buildings meet or exceed certain minimum design and construction safety standards. In most cases, compliance with these standards is difficult or impossible to verify in an existing foundation system because the foundation is below ground and the size, spacing, and location of steel reinforcement steel embedded in the concrete is difficult to determine.

While some concrete structures such as retaining walls greater than four feet and piers, pilings, caissons, and horizontal structural will be left in place for slope stability, the IMT cannot guarantee these structures will be undamaged or are structurally sound. The owner should consult a licensed civil or structural engineer to determine the proper course of action to rebuild any concrete structure left by the IMT.

CalRecycle considers all structural foundations for residential structures to be destroyed by the heat from an unsuppressed structure fire. These slabs and foundations are no longer structurally sound and now considered debris. Additionally, with the known amounts of carcinogens, heavy metals, and asbestos, structural slabs will need to be removed to assess the former building sites for residual ash contamination. The following two photos show extreme examples of concrete structures left in place by the IMT.



Photo: Example of retaining walls left by the IMT for erosion control (Thomas Fire 2017).



Photo: Example of remaining retaining walls and horizontal structural piers (Thomas Fire 2017).

Should the owner wish to keep a structural foundation, the owner should not participate in this public program and instead contract with a private debris removal contractor in accordance with local government requirements. Further information, exceptions, and requirements on damaged concrete can be found in the operational guidance document in Exhibit F.

5.14.4 Removal of Post Tension Slabs

A post tension slab is a concrete slab that has steel cables running through it that have been placed under significant tension (e.g., 25,000 to 35,000 psi). These types of slabs pose a significant danger if not properly removed. The tension in the steel makes the concrete slab and foundation much stronger than concrete without reinforcement. Most homes that have post tension slabs have a sign that is stamped into a concrete garage floor, often near the edge of the garage door in plain sight. Older home's with post tension slabs may have a plastic or paper sign fastened to the wall. These are often placed next to a door that goes from the garage into the house; however, since the fire destroyed these walls these indicators are not present.

If there are no visible signs on the wall or a stamped sign in the concrete floor, the contractor may be able to look for evidence of a post tension slab by walking around the perimeter of the home and looking for small circle type areas about one and one half (1 1/2") to three inches (3") wide that have been patched. These circles are usually about 2 to 4 feet apart. They indicate the end of the post tension cables and at times are not visible because of landscaping, debris, ash, or the patching of the cone shaped voids blend in.

Another source of information may be the builder or local building department. The IMT is responsible for checking with all local government concerning post tension slab and conveying this information to the contractor. Additionally, if one post tension slab in a neighborhood is discovered others are likely.

Demolition of post-tensioned concrete structures presents the debris removal contractor with unique set of safety issues. Because the cables or rods are not bound to the concrete, they can act like a stretched rubber band. When the concrete is broken, the cable may snap violently causing the imbedded anchors to become projectiles. In addition, the sudden release of the tendons causes the post-tensioned member to lose its tensile strength causing the concrete to fail. The result can be a catastrophic collapse of the entire building. To reduce the risk of injury or damage from post-tensioned structures, the Contractor will need to ensuring people are kept at a safe distance and that there are no exposures to property if anchors are ejected. To restrain anchors from being ejected, sandbags or other measures will need to be utilized to temporarily hold the anchors during removal. Temporary anchor restraints may also be needed.

Since working with post tension slabs and structures is a high hazard, a specific work plan and subcontractor with post tension demolition experience will be required. This subcontractor will also be required to remove the ash and debris and be in compliance with all the hazardous waste provision of this operations plan. **No other debris subcontractor will be allowed to remove the debris on lots with known post tension structures except for subcontractors with experience in removing post tension structures.** Workers should adhere to the recommended safe work practices and follow the prescribed procedures in the work plan. Demolition of any type of pre-stressed concrete structure requires extra diligence and awareness even for the most experienced workers.

This work plan, equipment, training, supplies, protection devices, any other material deemed necessary by the IMT to remove the debris and post tension structures will be covered under a change order or time and material agreement.

5.14.5 Driveways

Undamaged driveways shall be preserved to the extent practicable. The goal is to provide a stabilized construction entrance for reconstruction. If the driveway is damaged or contaminated by burned vehicles or by debris removal equipment or haul trucks to the extent that the driveway is unsafe, the driveway will be removed to the extent necessary. Remove the driveway to the nearest concrete joint or five feet if asphalt outside the contamination or damage. All driveway cuts will be made using a concrete saw. Use appropriate PPE.

5.14.6 Pools

In general, pools are not eligible for removal and will not be drained by the IMT. Debris may be removed depending on a case by case circumstance. The owner should contact the local government for assistance or evaluation of pools due to possible vector and health issues.

The contractor will place metal fencing completely around the pool where feasible and notify the property owner. Should the pool be structurally built into the foundation/slab, the IMT will discuss removal options with the property owner and Contractor to determine the course of action.

Above grounds may be removed if the property owner wants the above ground removed. Pool water may be used as dust control if feasible.

5.15 Hazardous Waste Operations Best Management Practices (BMPs)

Use of BMPs will ensure the proper management of hazardous materials, in a manner that protects on-site personnel, public health, and the environment.

At a minimum, site personnel shall implement the following BMPs during debris removal activities:

- All on-site personnel working in the exclusion (hot) zone shall receive the necessary health and safety training and medical surveillance pursuant to OSHA 1910.100, and CCR Title 8, Section 5192
- All on-site personnel working in the exclusion (hot) zone during debris removal operations shall be required to wear Level C PPE
- The Contractor and Consultant will conduct on-site and off-site air monitoring and sampling for asbestos and heavy metals during all ACM and debris removal operations to demonstrate the effectiveness of engineering controls to protect cleanup personnel and the surrounding community. The off-site air monitoring is more completely described in the Community Air Monitoring and Sampling Plan.
- All non-hazardous waste haulers who observe loading operations outside of the vehicle cab, and/or covering (e.g. tarping) the trailer or container must wear appropriate PPE per the approved Health and Safety Plan, including steel-toed boots, safety vest, hard hats and N95 dust masks. Note: the debris contractor is responsible for placing the plastic in the waste hauler and tarping the load while in the exclusion zone not the commercial driver.
- All landfill operators that may come in contact with the waste during off-loading operations should follow their facility's protocols for wearing PPE and respiratory protection.

5.16 Survey Monuments and Markers

Some survey monuments may be at risk during the ash and burn removal operations. To the extent feasible, all contractors shall protect survey monuments and markers. The contractor shall mark with a standard lath any exposed monuments or marks with ribbon flagging. Contractors should generally not work near the corners of the lot with heavy equipment.

5.17 Vehicles Abatement

Vehicles will be abated through either the local government, local law enforcement, or through the California Highway Patrol. Burned vehicles shall be considered burned hulks per Department of Motor Vehicles (DMV) regulations and may be drained of fluids onsite or at an approved metal recycling facility. Vehicles and burned hulks shall be bundled with a net/cover to prevent items from falling from the vehicles during transport.

5.18 Commercial Department of Transportation (DOT) Inspections

The Consultant will hire an independent third-party DOT commercial truck inspector. The third-party inspector and example of inspection paper work will be submitted to the IMT for approval. The inspector shall have the necessary insurance, qualifications, expertise to perform a level one inspection for all commercial trucks assigned to the incident. All inspection records, both pass and fail, shall be submitted to the IMT within 24 hours of the inspection.

Inspections will include all haul trucks, water tenders, tow trucks, street sweeper, low-beds, and other commercially licensed vehicles used on the project. Water trucks used specifically on site lots are not subject to inspection provided they are not carrying water loads on a public road. These water trucks are considered construction vehicles.

10% of all certified trucks will be re-inspected every 30 days.

5.19 Dangerous Conditions

Wildfire disasters can uncover and cause a number of dangerous conditions that would otherwise go undetected. Besides the dangerous conditions from burned trees, CalRecycle has discovered post tension slab, hand-dug wells and cisterns, unsecured mine shafts and tunnels, and unsafe bridges. If these situations are encountered, work will stop until a qualified person of the IMT has resolved the hazardous condition.

5.20 Tree Identification and Removal

While certain burned trees are obviously hazardous and the Contractor and/or the Operations Section Chief can approve the removal, a forester or arborist may be necessary to perform an assessment of questionable trees, which may pose a hazard.

The objectives of the tree assessment and inventory will include:

- Identification of all trees damaged by the incident,
- Assessment of the damage to and survivability of each tree,
- Assessment of each tree against established indicators of a dangerous tree, and
- Determination of which trees should be removed during recovery efforts conducted by CalRecycle.

Following identification and marking of hazardous trees, the Contractor, or an approved subcontractor, will remove trees employing all engineering controls to mitigate dust generation and ensure site safety protocols. Trees should be felled in areas away from utilities, septic tanks, or ash. Should it be necessary to fall a tree in the ash, the tree shall be appropriately decontaminated. All wastes generated from the removal of trees will be hauled to an appropriate waste or recycling facility.

5.21 Potential Earthwork

While not anticipated, the IMT may elect to import structural soil fill. No structural fill may be imported and placed without written authorization from the Incident Commander and/or Operations Section Chief. If structural soil fill is necessary, the borrow pit will be pre-identified and approved by the IMT before operations. The soil shall be tested geotechnically and chemically per Title 22, CAM-17 metals to ensure the imported soil is within the cleanup goals and suitable for structural fill. The Consultant will hire a qualified geotechnical firm to prepare a soils report, perform the geotechnical tests, oversee site preparation, placement, and compaction of the structural fill, and prepare a final compaction report to be submitted to the local government. The Contractor will apply for a grading permit from the local government. Grading shall be performed in accordance with Appendix J of the California Building Code, local ordinances, and specifications from the geotechnical firm.

In general, the soil material shall be placed in thin lifts. Lifts shall not exceed 6 inches uncompacted and shall be applied within 2 percent of optimum moisture content. The lift shall be compacted with a target compaction of 90 percent of the maximum dry density as determined by ASTM D 1557. This provision will be handled through a change order.

5.22 Cover Materials

If conditions are discovered through soil sampling that indicate the native soil is significantly above cleanup goals due to natural or anthropogenic conditions, the IMT may elect to cover the site with clean soil. No cover material may be imported and placed without written authorization from the Incident Commander and Operations Section Chief. If imported cover material is necessary, the borrow pit will be pre-identified and approved by the IMT before operations. The import of the soil cover material shall be tested per Title 22, CAM-17 metals to ensure the imported soil is below cleanup goals. The cover shall be applied at a depth of 3 to 6 inches and compacted. The cover materials should be applied to all Contractor disturbed areas and other areas as directed by the Operations Section Chief. Erosion control devices should also be installed such as compost socks that do not require the trenching of the soil. Cover material will not require a grading permit. This provision will be handled through a change order.

5.23 Traffic Control

Traffic controls and warnings standard to the construction industry and as required by the State of California Motor Vehicle Code will be implemented on an as needed basis. Vehicles utilized for debris removal will be of legal weight according to the CalTrans State Standard Specifications (2002 Edition), Section 7-1.08 "Public Conveyance", Section 7-1.09 "Public Safety", Section 12" Construction Area Traffic Control Devices".

Traffic signs will be placed at entrances to communities as needed. Traffic control will be updated as needed to adjust for changing conditions on site and in the community. Updated traffic plans will be prepared by the Contractor and reviewed by the appropriate County representatives and Operations Section Chief and communicated to all project personnel at each Safety Meeting.

All construction equipment working within the residential zones shall maintain a speed of 15 mph or less.

The IMT will also establish additional traffic controls as needed to control site vehicle traffic during specific site activities such as equipment movement, press events or visits by dignitaries.

5.24 Pavement and Drainage Protections

The Contractor at all times will protect the edge of pavement and drainage features to the extent feasibly possible. The Contractor will also protect other crossings such as cattle guards and bridges.

5.25 Trackout Management

The Contractor will implement procedures to prevent or cleanup trackout as specified below. The use of blower devices, or dry rotary brushes or brooms, for removal and trackout on public roads is expressly prohibited. The removal of trackout from paved public roads does not exempt an owner/operator from obtaining state or local agency permits which may be required for the cleanup of mud and dirt on paved public roads.

The Contractor shall prevent trackout, or immediately remove trackout when it extends 25 feet or more from the nearest unpaved surface exit point of a site and at the minimum remove all other visible trackout at the end of each workday.

Cleanup of trackout shall be accomplished by:

- Manually sweeping and picking-up; or
- Operating a rotary brush or broom accompanied or preceded by sufficient wetting; or
- Operating a PM10-efficient street sweeper.

The use of blower devices, or dry rotary brushes or brooms for removing trackout on a public/private road is prohibited. Waste from a street sweeper during this operation shall be disposed of as contaminated soils and transported directly to the landfill or covered in a waste hauler.

6.0 HUMAN REMAINS AND TRIBAL ARTIFACTS

6.1 Human Remains

If human remains are located the work will stop and the IMT will contact Butte County Sheriff's Department. Due care of the remains and area will be taken. The contractor will not move any resources off the site until the both Butte County Sheriff and tribal representatives have time to evaluate and possibly relocate remains. The IMT will work with the local officials and tribes to secure the remains if requested. If the remains are part of a crime scene, the site will be suspended by the IMT unless proper investigation has taken place.

6.2 Significant Cultural Artifacts and Tribal Remains Protocols

CalRecycle is in consultation with local tribes to determine if significant cultural resources may be present at parcels in advance of debris removal. Should the potential for those resources to exist, the tribe will have the opportunity for a Tribal Monitor to be present during activities that may disturb the ground. Tribal Monitors must comply with Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements while on-site during debris operations.

If culturally significant artifacts and/or remains are discovered as a result of debris removal operations, the Tribal Monitor has the ability to direct debris removal crews to immediately cease work on the site to further evaluate the find. The Tribal Monitors are empowered to recommend stoppage or relocate excavation activities, and conduct further controlled

excavation of inadvertently discovered significant cultural items to ensure the remains and artifacts are properly cared for per the tribe's policies and procedures.

If a Tribal Monitor is not present on a project parcel and Native American human remains (or other human remains) are found during debris removal activities, debris removal crews will immediately cease work and contact the Operations Chief or his designee. CalRecycle will arrange a site visit with a Tribal Monitor, who will determine appropriate steps to identify and protect the remains or culturally significant artifacts.

7.0 SOIL SAMPLING

7.1 Background Soil Assessment to Determine Cleanup Levels

CalRecycle's Consultant will identify individual geological units with potentially differing soil types within the footprint of the Camp Incident. Once these units are selected, background soils in the vicinity, but not in ash impacted areas will be collected and sampled to establish the naturally or anthropogenic occurring metal concentrations around the Camp Incident. Prior to sampling, the ground surface will be prepared by removing any vegetation or debris and the top 3 inches of soil broken up with a pickaxe or trowel, and the soil will be loosened in preparation for sample collection.

All samples shall be analyzed for California Code of Regulations (CCR) Title 22 metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc) by Environmental Protection Agency (EPA) Method 6020 by a California-certified laboratory. Certification may be through the State of California Water Boards Environmental Laboratory Accreditation Program (ELAP) or other equivalent certification for inorganic chemistry of hazardous waste. Results from these samples will be used to establish cleanup goals as described in *Section 7.3*.

In addition, if directed by the Operations Section Chief, baseline assessment samples may be taken at truck staging areas and equipment yards. At a minimum, these samples shall be analyzed for CCR Title 22 metals and Total Recovered Petroleum Hydrocarbons (TRPH) by a California-certified laboratory. Results from these samples will be used to establish a baseline and additional samples will be collected upon demobilizing to ensure no residual ash material or hydrocarbon spill was left behind. Depending on the location of the truck staging area, other chemicals of concern such as pesticides or polychlorinated biphenyl (PCB) may be collected.

All background soil sample results will go through a Level 4 data validation process.

7.2 Confirmation Sampling

Confirmation sampling will be conducted after fire-related debris from structures, mobile homes, large debris fields, RVs, and vehicles have been removed from a property. After the debris is removed, representative soil samples will be collected and analyzed to measure concentrations of constituents of concern. CalRecycle's confirmation sampling will be based on the United States Environmental Protection Agency's "Superfund Lead-Contaminated Residential Sites Handbook." Based on a review of over 4,000 discrete samples from previous wildfire residential cleanups, CalRecycle's Matter Expert, Mr. Todd Thalhamer, has elected to reduce the decision unit used in the Handbook to ensure fire-related contaminants are not present in soils beneath or adjacent to impacted structures. The number of soil samples collected per excavated area on a parcel will be determined based on the estimated square footage of the ash footprint; a minimum of one composite sample will be collected from a footprint measuring approximately 100 square feet or less.

Table 9 indicates the total number of five-point, composite samples needed to be collected based on the estimated square footage of ash footprint.

Table 9. Confirmation Sampling Matrix	
Estimated Square Footage of Ash Footprint (Decision Unit)	Number of 5-Point Aliquots
0-100 square feet	1
101-1,000 square feet	2
1,001-1,500 square feet	3
1,501-2,000 square feet	4
2,001-5,000 square feet	5
>5,000 square feet	Sampling strategy will be discussed between the IMT and Environmental Consultant

All confirmation samples will be collected from a depth of 0-3 inches using a dedicated 4-ounce plastic scoop and placed in 8-ounce jars. Samples will be shipped to an approved laboratory for analysis for Title 22 Metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium and zinc) by EPA Method 6020 and EPA Method 7403 for Mercury. Other analytes were not selected based on previous fire incident sampling (CalEPA 2015). Each aliquot location will be recorded on the site assessment log and physically marked with irrigation flags. A geographic positioning system (GPS) may also be used if sample locations are not easily determined.

If any of the areas exceed the site-specific screening levels, the aliquot (sample) locations will be inspected and it will be decided by CalRecycle and the Consultant if a localized scrape or a full scrape of the portion of the remediated footprint will be needed. Upon completion of this remediation, the Consultant will collect three discrete samples from the area and submit them for analysis as discussed above.

Confirmation sampling results will be compared to the project established cleanup goals to assess the effectiveness of the ash and debris removal. The Consultant will evaluate the analytical results by comparing the soil sampling results to the pre-determined background concentrations and cleanup goals. If any of the confirmation sampling results exceed cleanup goals, the parcel will be further excavated at the direction of the Operations Section Chief and the Consultant will collect additional confirmation soil samples after excavation is complete.

All soil confirmation samples will go through a Level 2 verification process.

Once the samples pass the cleanup goals or site-specific goals, a sample approval form will be forwarded to the local government so the property owner can begin the permit process. The property owner is not allowed to impact the sampling area until erosion control and final site walk is complete.

7.3 Cleanup Goals

California and Federal health-based standards were compiled to evaluate cleanup goals for the Camp Incident debris operation. These goals are based on screening levels established by United States Environmental Protection Agency (USEPA), DTSC Office of Human Health and Ecological Risk Assessment, and the Office of Environmental Health Hazard Assessment for residential uses, and the local soil concentrations that are naturally occurring or from anthropogenic sources. These background levels are critical in determining the cleanup goals.

Using appropriate background levels ensure that soil is not removed which may be above the health-based standards, but are not related to the debris from the incident.

While some fire debris projects are localized and background levels do not vary, some debris projects cover 100 square miles, multiple geological units, and may be impacted from former mining or other anthropogenic sources (i.e., highways, industrial businesses, etc.) where local soil concentrations can vary.

Based on natural and an anthropogenic variability of metals in Butte County, the 95% upper tolerance limit (UTL) will be used as a screening value, unless the California Health Standards are higher. All other metals will use the pre-designated health screening levels. The health-based standards are background concentrations and included in *Appendix B*. In addition, the Consultant will establish cleanup goals for the project and will prepare a Background Sampling and Cleanup Goals Report. The report is also included in *Appendix B*. Typical background and health-based standards are shown in Figure 10.

Figure 10. Typical Soil Background and Health-Based Standards for California Wildfire Structural Debris Removals.

Initial Health Screening Criteria for Soil		
Analyte	Health Screening Level mg/Kg	Cleanup Level
Antimony	30	Health Screen
Arsenic	0.07	Background
Barium	5,200	Health Screen
Beryllium	15	Health Screen
Cadmium	1.7	Health Screen
Chromium	36,000	Health Screen
Cobalt	23	Background and Health Screen
Copper	3,000	Health Screen
Lead	80	Background and Health Screen
Mercury	5.1	Health Screen
Molybdenum	380	Health Screen
Nickel	490	Health Screen
Selenium	380	Health Screen
Silver	380	Health Screen
Thallium	5	Health Screen
Vanadium	390	Health Screen
Zinc	23,000	Health Screen

Note: Cleanup goals are based on background levels, California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC) Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) DTSC-modified Residential Soil Screening Levels (SLs), and/or the U.S. Environmental Protection Agency (USEPA) Residential Regional Screening Levels (RSLs).

8.0 FINAL EROSION CONTROL

Erosion control measures will be implemented to stabilize disturbed soil and reduce sediment transport caused by erosion from entering a storm drain system or receiving water body during debris removal after a disaster. Best management practices for erosion controls may include the use of fiber rolls, compost filter socks, silt fences, erosion control blankets, hydraulic mulch and tackifier, soil binders, and other mechanisms to reduce sediment. Erosion control plans will be developed by the Operations Section Chief, with input from the Consultant, for those sites requiring Level 3 erosion control. These erosion control levels are described below. Erosion control shall be installed after each lot has met the site-specific cleanup goals, unless the owner requests not to have it installed. If this is the case, the owner shall sign the erosion control waiver form and the site will be considered complete after the final walk is performed. By signing this form, the owner agrees to comply with the county's erosion control regulations. Effort should be made to preserve existing vegetation, if practicable. Once the removal has been completed, storm water control measures must be maintained by the property owner or local government. No seeds will be used for individual lots based on past property owner concerns.

8.1 Erosion Control Methods

Each residential parcel will receive one of the following measures:

- Level 1: Hydraulic mulch and tackifier. Hydraulic mulch will include a wood-based mulch along with an organic or other proposed tackifier to cover over 95% of the lot impacted by the structural debris removal operations. No seeds will be used on this project.
- Level 2: Hydraulic mulch and fiber log and/or compost filter sock. Fiber logs shall be a minimum of 6" to 8" diameter and shall be staked and keyed in. Silt fences shall be wire-backed in snow zones and used in areas on slopes greater than 7%.
- Level 3: Hydraulic mulch, fiber log and/or silt fence and erosion control blankets.

Additional erosion control methods may be developed after consultation with local agencies and the Operations Section Chief.

8.2 Erosion Control Materials and Specifications

Materials used for erosion control shall be placed in accordance with this Operations Plan or as directed by the Operations Section Chief, Division Supervisors, or other appropriate entity. All materials shall be certified weed free in an effort to control the spread of noxious weeds.

The following materials have been identified for the project:

- Hydraulic mulch
- Organic tackifier or other proposed tackifier
- Fiber bundles
- Compost socks
- Erosion control blankets
- Gravel and drain rock
- Silt fence
- Netting
- Anchors
- Gravel bags

Hydraulic Mulch – Hydraulic mulch or hydro-mulching is an erosion control process that uses a slurry wood fiber and a tackifier. The slurry is transported in a tank, either truck or trailer-mounted, and sprayed on prepared ground. Each contractor will develop a submittal for the hydraulic mulch for approval by the IMT. The mulch design will be based on virgin wood fiber and a non-toxic organic base tackifier. Application rates will also be submitted based on slopes.

Compost filter socks - Compost filter socks are a three-dimensional tubular sediment control and storm water runoff filtration device typically used for perimeter control of sediment and soluble pollutants on and around construction activities. Compost filter socks trap sediment and soluble pollutants by filtering runoff water as it passes through the matrix of the compost filter socks. **Compost filter socks shall be used on all hardscape areas for erosion control.** These areas include driveways, hardscape features including concrete, brick, asphalt and gravel roads, lava cap soils, and areas directed by the IMT. Compost filter socks shall be 5" to 8" inches in diameter.

Erosion Control Blanket – Erosion control blanket is a manufactured blanket or mat that is designed to hold soil and seed in place on slopes. It consists of organic biodegradable materials such as wood fiber, coconut fiber, or a combination of these materials. It is commercially manufactured and delivered to the site in rolls.

Erosion control blankets shall be 100% organic biodegradable (including parent material, stitching, and netting). The minimum thickness shall be 3/8" (9mm). The netting shall be stitched to prevent separation of the net from the parent material. The netting shall be capable of withstanding moderate foot traffic without tearing or puncturing. Neither the blanket or netting or the installation shall pose a safety risk to people walking on/crossing over it, or pose a hazard to wildlife such as birds, reptiles, and amphibians.

Appropriate products include, but may not be limited to:

- Curled I Fiber net (American Excelsior)
- Curled II Fiber net (American Excelsior)
- AEC Premier Straw Fiber net (American Excelsior)
- S 75 BD (North American Green)
- S 150 BN (North American Green)
- SC 150 BN (North American Green)
- C125 BN (North American Green)
- Excel S-2 All Natural (Western Excelsior)
- Excel SS-2 All Natural (Western Excelsior)
- Excel CS-3 All Natural (Western Excelsior)
- Excel CC-4 All Natural (Western Excelsior)

Fiber Roll Barriers – Fiber roll barriers (also called sediment logs or straw wattles) are commercially manufactured and usually consist of milled wood or other natural fibers sewn into a circular weave fabric. Fiber rolls are good perimeter protection, designed to slow storm water runoff and trap small amounts of sediment. Fiber rolls shall be 8" to 12" diameter. Fiber rolls must be certified weed free.

Silt Fence – Silt fence consists of a permeable filter fabric that is keyed into the ground and staked beyond the toe of a slope. The fabric pools runoff, causing entrained sediment to settle out behind the fence while water slowly filters through the fabric.

Anchors – Anchors are devices that secure erosion control materials such as fiber roll barriers, erosion control blankets, and silt fence.

For erosion control blankets, anchors shall be completely biodegradable, environmentally safe, and have no potential for soil and/or water contamination. Steel wire pins or staples may be approved by the Operations Section Chief if the alternative is not available or not functional. Petroleum based plastics or composites containing petroleum-based plastics will not be approved. Materials deemed to present a hazard from splintering or spearing will not be approved. Wood stakes or stakes manufactured from wood byproducts may be approved.

Appropriate products include, but may not be limited to:

- E-Staple (American Excelsior)
- CF Bio Staple (CFM Corp)
- Green Stake (Green Stake)
- Bio-Stake (North American Green)
- Enviro-Stake (ODC Inc.)

For silt fence, anchor posts shall be at least 36" long. Steel posts should weigh no less than one pound per linear foot.

For fiber roll barriers, stakes shall be wooden and at least 18" long.

Netting – Netting is a manufactured product intended to secure wood chips or pine needle mulch to the soil surface.

Netting shall be 100% organic biodegradable and may consist of paper, jute, or cotton netting. Netting material shall be approved by CalRecycle staff prior to installation.

Gravel Bags – Gravel bags are intended to slow storm water flows and trap sediment on paved surfaces.

Gravel bags shall be filled with $\frac{3}{4}$ " to $1\frac{1}{2}$ " *washed* rock. Bags filled with sand will not be approved.

8.3 Installation Standards

Erosion control BMPs installation shall consist of furnishing and applying erosion control materials. The work includes proper material handling, area preparation, and proper application of the erosion control materials and structures.

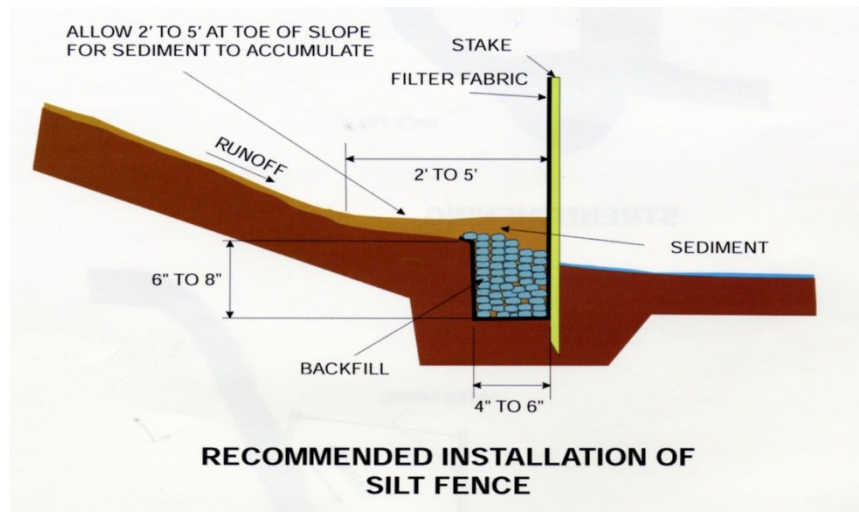
Area Management – Construction/demolition materials shall be stored to the maximum extent possible on paved surfaces. When this is not possible, construction/demolition materials shall be stored on areas where a future structure or other hard impervious surface will be constructed, such as a future building foundation or driveway.

Compost filter socks and fiber roll barriers – Install 5, 8 or 12-inch diameter compost socks as directed by Operations Section Chief. Compost socks may require trenching or/and anchors, depending on application, as directed by the Operations Section Chief. Compost socks do not require trenching when used to interrupt sheet flows on asphalt, concrete or other impervious surfaces.

Construction/demolition vehicles shall remain on paved surfaces to the maximum extent possible. When this is not possible, construction/demolition vehicles shall be used in areas where rebuild of impervious surfaces will occur, such as building foundation or driveway locations.

Silt Fence – Install silt fences as directed by the Operations Section Chief. Six inches of the fence shall be buried in a trench along the base of the fence. The posts shall be spaced a maximum of 10 feet apart and driven 18" into the soil or to refusal. Sediment shall be removed from the up-slope side of the fence when it reaches 1/3 the height of the fence. Refer to Figure 11 below.

Figure 11. Silt Fence Detail Drawing

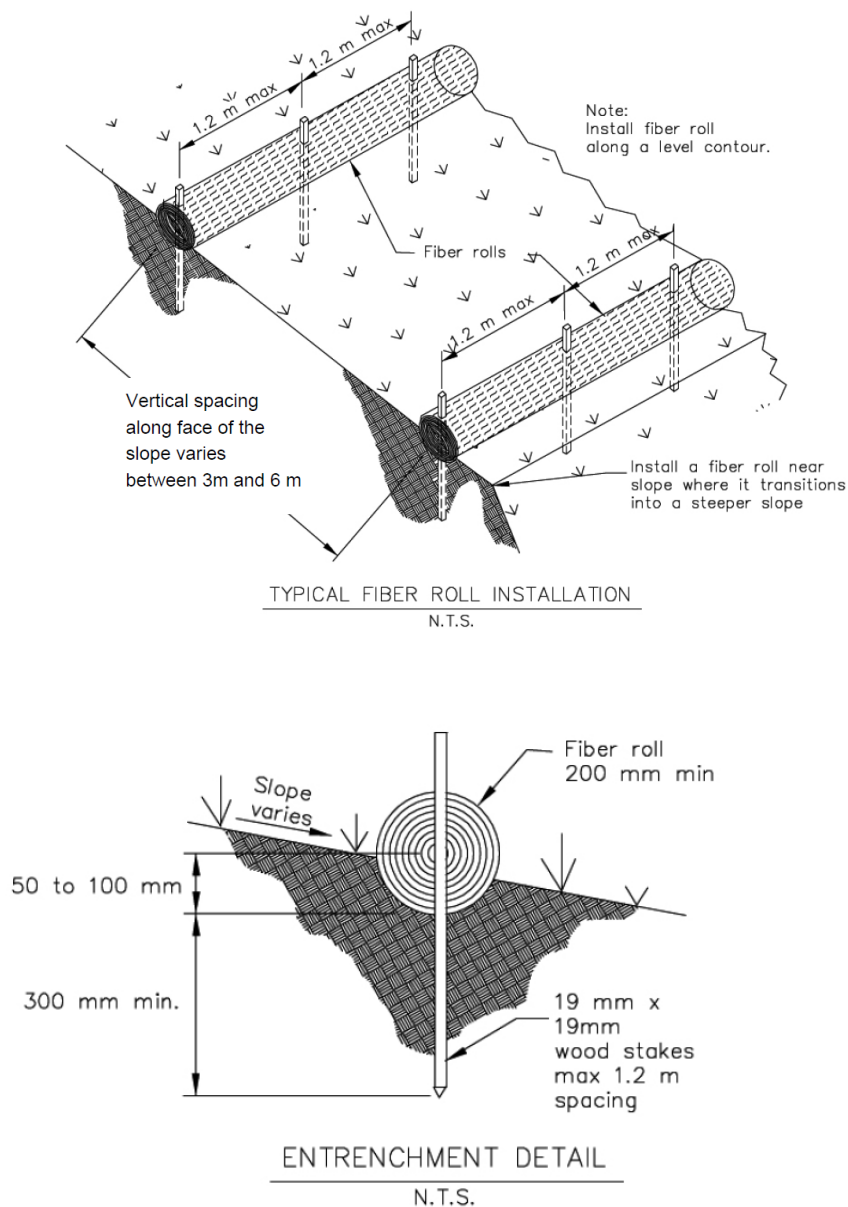


Erosion Control Blanket – Install erosion control blankets as directed by the Operations Section Chief. Starting at the top of the slope, anchor the blanket in a 6-inch trench, backfill, and securely tamp the backfilled soil. Unroll the blanket downslope, overlapping parallel and subsequent blankets a minimum of 4 inches. Secure blankets with anchors along the overlaps and place a minimum of 3 anchors per square yard. Contractor shall determine if more anchors are required and shall be responsible for installing the erosion control blanket so that it will stay in place.

Fiber Roll Barriers – Install 8 or 12-inch fiber roll barriers as directed by Operations Section Chief. Place the fiber roll barrier in a 2 to 4-inch trench perpendicular to the flow path of storm water. Drive stakes in perpendicular to the ground. If required on steep slopes, drive stakes on either side of the roll and bind together with bailing wire. Weighted rolls may be used as appropriate, especially on driveways. Refer to detail Figure 12 below. Typical installation spacing for the fiber rolls will be as follows:

- 10 feet apart for slopes steeper than 2:1 (horizontal: vertical)
- 15 feet apart for slopes from 2:1 to 4:1 (horizontal: vertical)
- 20 feet apart for slopes from 4:1 to 10:1 (horizontal: vertical)
- 50 feet apart for slopes flatter than 10:1 (horizontal: vertical)

Figure 12. Fiber Roll Detail Drawings for Steep Slopes



Compost filter socks - The sock shall be installed down slope of any disturbed area requiring erosion and sediment control and filtration of soluble pollutants from runoff. Compost filter socks are effective when installed perpendicular to sheet or low concentrated flow, and in areas that silt fence is normally considered appropriate. Acceptable applications include:

- Site perimeters
- Above and below disturbed areas subject to sheet runoff, inter rill and rill erosion
- Above and below exposed and erodible slopes
- Along the toe of stream and channel banks
- Around area drains or inlets located in a 'sump'

- On compacted soils where trenching of silt fence is difficult or impossible
- Around sensitive trees where trenching of silt fence is not beneficial for tree survival or may unnecessarily disturb established vegetation.
- On frozen ground where trenching of silt fence is impossible.
- On paved surfaces where trenching of silt fence is impossible.

Gravel Bags – Gravel bags or weighted fiber rolls shall be placed on the downslope edge of impervious surfaces, such as driveways. Place gravel bags in double row in a “U” shape.

9.0 HEALTH AND SAFETY

The removal operations personnel including consultants and contractors will, at all times, operate equipment and perform labor in a safe manner to ensure the safety of its employees and the public. The team will pay particular attention to operations around local roads and take the necessary precautions. Prior to start of debris removal, the contractors should note the number of power lines crossing the site, dead trees, chimneys, mines, hand dug wells, and all underground utilities. See *Exhibit G* for the Hand Dug Well Destruction Plan.

It is critical each Task Force performs a daily safety meeting, a 360° pre-job walk, and look up at each tree inspect each tree for damage to the branches, roots and trunk system. A designated truck spotter shall also be used for each load.

Appropriate eating areas will be designated and hand and eye washing and mobile sanitary facilities will be provided for each project site.

CalRecycle's Site Health and Safety Plan is included in *Appendix E*.

9.1 Health and Safety Plan

All personnel shall operate under a Site-Specific Health and Safety Plan for Hazardous Waste Operations and Emergency Response (HAZWOPER) under Title 8, California Code of Regulations (CCR) Section 5192 (8 CCR 5192); and Title 29, Code of Federal Regulations (CFR) Section 1910.120 (29 CFR 1910.120), Standards for Hazardous Waste Operations and Emergency Response, Standard, 29 CFR 1910.120. Each prime contractor and the environmental consultant shall submit an SSHP developed by a Certified Industrial Hygienist to the IMT for review. This plan will cover at a minimum the Cal/OSHA topics for Worker Safety and Health during Fire Cleanup. This guidance document can be found at <https://www.dir.ca.gov/dosh/wildfire/Worker-Health-and-Safety-During-Fire-Cleanup.html> and in Exhibit I.

9.2 Respiratory Protection

The Consultant and Contractor will be required submit a written respiratory plan to the IMT as part of the health and safety plan. The Consultant and Contractor will conduct evaluations of the workplace to ensure that the written respiratory protection program is being properly implemented and to consult employees to ensure that they are using the respirators properly. The Consultant and Contractor shall regularly consult employees required to use respirators to assess the employees' views on program effectiveness and to identify any problems. Any problems that are identified during this assessment shall be corrected. Factors to be assessed include, but are not limited to:

- Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);

- Appropriate respirator cartridge selection for the hazards to which the employee is exposed;
- Proper respirator use under the workplace conditions the employee encounters; and
- Proper respirator maintenance.

9.3 Site Personnel and Community Air Monitoring

To ensure the debris operation is not subjecting the work force and community to unsafe levels of dust, asbestos, and heavy metal, the IMT will develop air sampling and community sampling plans for the County of Butte to review and comment. Site personnel and community air monitoring will include dust, asbestos, silica, and heavy metals [at a minimum arsenic, cadmium, chromium, (chromium +6 and mercury will be limited to the first 20 days of the initial personnel breathing zone samples or as directed by the Operation Section Chief based on site history and geological observations), copper, lead, manganese, nickel, silver and zinc] per OSHA requirements for hazardous waste operations. Air samples are not required during soil rescrapes or any other work after debris materials have been removed.

The air samples in the community and work sites will be monitored for asbestos, heavy metals, and dust by the environmental group or air sampling technician for the duration of the project or until such time the Operations Section Chief or environmental group determines that air monitoring may cease. The air data will be submitted to the County of Butte, Environmental Health Department and the local air district. The IMT will consult with the local air district prior to any changes in the community air sampling plan.

The location of the air sampling will be determined by the Operations Section Chief and Consultant. The Air Monitoring Plan is included in *Appendix D*.

9.3.1 Potential Heavy Metal Exposures

The Consultant and Contractor shall perform heavy metal monitoring to determine accurately the airborne concentrations of heavy metals to which employees may be exposed in the exclusion and support zones. Heavy metals sampling will include at a minimum arsenic, cadmium, chromium, (chromium +6 and mercury will be limited to the first 12 days of the initial personnel breathing zone samples and every 60 days after 12 days of monitoring or as directed by the Operation Section Chief based on site history and geological observations), copper, lead, manganese, nickel, silver and zinc.

The Consultant and Contractor will collect a set of samples from the employee's breathing zone that are representative of the 8-hour TWA exposures. At a minimum, the Contractor shall monitor one crew out of every five crews, or one crew if under five crews, two crews if under 10, three crews if under 15, etc. Crews shall be monitored on a rotational basis during the workweek. Crews, IMT, and other impacted employees shall be notified no later than five (5) working days following the receipt of the verified monitoring results. Maximum lab turnaround is three (3) days. The personnel air monitoring results shall be submitted to the IMT no later than five (5) business days of receiving the verified monitoring results.

9.3.2 Potential Asbestos Exposures

The Consultant and Contractor shall perform asbestos monitoring to determine accurately the airborne concentrations of asbestos to which employees may be exposed in the exclusion and support zones. The Consultant and Contractor will collect a set of samples from the employee's breathing zone that are representative of the 8-hour TWA exposures. At a minimum, the Contractor shall monitor one crew out of every five crews, or one crew if under five crews, two crews if under 10, three crews of under 15, etc. Crews shall be monitored on a rotational basis during the workweek. Crews, IMT, and other impacted employees shall be notified no later than

five (5) working days following the receipt of the verified monitoring results. Maximum lab turnaround is three (3) days. The personnel air monitoring results shall be submitted to the incident management team no later than five (5) business days of receiving the verified sampling results.

9.3.3 Potential Silica Exposures

The Consultant and Contractor shall assess the exposure of each employee who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level using an 8-hour TWA exposure for a statistically significant set of samples from employee's breathing zone that are representative of the 8-hour TWA exposures. Crews, IMT, and other impacted employees shall be notified no later than five (5) working days following the receipt of the verified monitoring results. Maximum lab turnaround is three (3) days.

9.4 Rope Access Work

Steep slopes may require the use of ropes and repel gear to assess and remove debris. If ropes are necessary for access, the Contractor will submit a Rope Access Plan per the California Code of Regulations, Title 8, Section 3270.1, Use of Rope Access Equipment. The Contractor or Consultant shall establish, implement and maintain a written Code of Safe Practices for rope access work. The written plan shall include, but not be limited to the following elements:

- Methods of rope access and anchorage used by the employer.
- Employee selection criteria.
- Equipment selection and inspection criteria.
- Roles and responsibilities of rope access team members.
- Communication systems.
- Employee training program.
- Rescue and emergency protocol.
- Identification of any unique site hazards that may affect the safety of employees using rope access methods.
- Prevention of rolling debris.
- Structure and infrastructure protection.

This work plan, equipment, training, supplies, protection devices, any other material deemed necessary by the IMT to implement this plan will be covered under a change order or time and material agreement.

9.5 Community Health and Safety

A Community Health and Safety Plan has been prepared by CalRecycle. All site activities will be conducted consistent with this community plan and with consideration to the surrounding community and all citizens affected by the Camp Incident. A copy of the Community Health and Safety Plan is included in *Appendix C*.

10.0 SITE APPROVAL

Following placement of erosion control, CalRecycle will recommend that Butte County approve each site as complete and ready for a building permit to be processed. The IMT will supply a final signoff sheet for every parcel. The approved final inspection will be sent to the local government as a record of completion.

11.0 FINAL REPORTS

CalRecycle will provide a final report, as prepared by the Consultant, for each property to Butte County that includes a copy of the initial property debris perimeter and foundation surveys, pre-removal site photographs, final site condition photographs, certified laboratory data for the confirmation samples, and tabulated laboratory data comparing the confirmation sample results to the established cleanup goals. The report will describe the work conducted, the results of site surveys and confirmation sample results, and provide an opinion regarding the adequacy of the debris removal and cleanup work. Reports will be signed by a Certified Engineering Geologist or Professional Engineer licensed in the State of California. Typically, the final reports are submitted 6 to 9 months after the last debris site is completed.

EXHIBIT A
EXECUTIVE ORDER B-57-18

EXHIBIT B
DECLARATION OF LOCAL HEALTH EMERGENCY

EXHIBIT C
RIGHT OF ENTRY PERMIT

EXHIBIT D
DEBRIS REMOVAL FINAL SIGNOFF FORM (EXAMPLE)
Camp Incident

DEBRIS REMOVAL FINAL SIGNOFF FORM

SITE ADDRESS: _____

Debris Removal Complete ☐ Yes ☐ No

Confirmation Sampling Approved ☐ Yes ☐ No

Erosion Control Complete ☐ Yes ☐ No ☐ Waived

Erosion Control Level/BMP ____ 1 ____ 2 ____ 3 (Please attached drawing for Level 3)

Debris Removal Project Approved ☐ Yes ☐ No

FINAL APPROVAL DATE: _____

Noted Observations:

Operations Section Chief

County Approval

EXHIBIT E
DAMAGE CLAIM FORM (EXAMPLE)



Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

CalRecycle



Camp Incident DEBRIS REMOVAL OPERATION
HOMEOWNER PROPERTY DAMAGE CLAIM

Property Owner Name:

Address:

Property Owner Claim:

Property Owner Signature

Date

Division Supervisor Statement:

Division Supervisor Signature

Date

Resolution:

Approval:

Todd Thalhamer, CalRecycle Operations Section Chief

Date

Melinda Stehr, Cal OES Incident Commander

Date

EXHIBIT F

DEBRIS OPERATIONAL GUIDANCE: DAMAGED CONCRETE AT WILDLAND URBAN INTERFACE FIRES

Version 5.0, February 10, 2019

By Todd Thalhamer, P.E., CA Subject Matter Expert in Residential Structural Debris

Background

The purpose of this debris removal guidance is to assist field operational decisions under a CalRecycle structural debris removal program in removing impacted concrete. Working around concrete structures in areas impacted by ash and debris requires significant careful and deliberate effort with equipment and hand labor to remove contaminants or the contractor risks leaving contaminants behind. Here are life hazards as well when working around post tension slabs. Demolition of post-tensioned concrete structures presents a unique set of safety issues because the cables or rods are not bound to the concrete and can act like a stretched rubber band. When the concrete is broken, the cable may snap violently causing the imbedded anchors to become projectiles. Additionally there are risks that other aspects of the home site could be damaged by the removal efforts as well. Generally, all materials including concrete in areas directly impacted by the fire and subsequent ash and debris will need to be removed.

As with all construction work, a number of field decisions must be made by qualified individuals to complete debris removal. This guidance is designed to operate in accordance with the Standardized Emergency Management System (SEMS) by using the Incident Command System (ICS) for field response. All field personnel will use this Damaged Concrete Guidance to ensure consistent safe practices are followed. Common issues are addressed below; if questions arise about a concrete structure/wall/pad in the field, please refer to the next level of command for further guidance. Field training is always available to assist in decision making. CalRecycle utilizes the following concrete operating procedures relative to situations encountered during debris removal from residences following catastrophic wild fires.

Discussion

The average house fire burns at a temperature of about 1,100 degrees Fahrenheit (°F) but can reach in upwards of 1,300°F depending on certain conditions such as wind and building construction. The longer concrete is exposed to heat, such as that generated by a large-scale wildland, urban interface fire where little to no structural firefighting suppression occurs, the more damage the concrete sustains.

Basic behavior of concrete at high temperatures is well established in textbooks and discussed in the literature. Important factors in assessing the damage to concrete are the rate of heating and the duration of exposure to high temperatures. At slightly above 212°F, free water in concrete begins to evaporate rapidly. When concrete reaches about 350°F, a significant amount of chemically bound water is released. When concrete temperatures reach above 750°F, the residual compressive strength typically drops by 50 to 60% and the concrete is considered fully damaged.

Existing footings, slabs, and foundation systems in fire-destroyed buildings should not be and/or not typically permitted to be re-used. The effects of intense heat and fire on a foundation system renders the foundation unusable, or impractical for re-use. A long burning fire can generate enough heat to damage and weaken the concrete and steel reinforcement bars in footings,

slabs, and footing stem walls. Even though concrete is non-flammable and offers fire protective qualities for preventing the spread of fire, it loses most, if not all of its structural strength characteristics when exposed to extreme heat from a long burning fire.

Foundation anchorage hardware (steel bolts and hold-down anchors) are typically lost or severely compromised during a serious fire and cannot be replaced or repaired without significant expense. Installing replacement anchors in an existing footing is labor intensive and requires special inspection during installation, which can add substantial cost. Replacement anchors for hold down hardware must be re-engineered and are difficult and expensive to install in existing concrete footings. Plumbing pipes and electrical conduit embedded in the concrete is usually destroyed or heavily damaged during a fire. Repairs and replacement of pipes and conduit in existing foundations involves the removal and replacement of portions of the concrete that encapsulates them, which further compromises the concrete. This process usually involves the saw-cutting or jack-hammering out those portions of concrete containing pipes and conduit, removing and replacing the damaged pipes and conduit, and pouring the replacement concrete. This task becomes dangerous when dealing with a post tension slab damaged by a fire. Additionally, moisture barriers placed under concrete slabs can be destroyed or damaged by heat and fail to prevent water from impacting the structure.

Older foundation systems typically do not meet today's structural design requirements for earthquake safety or wind loads. This is especially true in cases where the original building was constructed prior to 1974. Current State Codes require that new buildings meet or exceed certain minimum design and construction safety standards. In most cases, compliance with these standards is difficult or impossible to verify in an existing foundation system because the foundation is below ground and the size, spacing, and location of steel reinforcement steel embedded in the concrete is difficult to determine.

Conclusion

While some professionals use color changes and hammer tests to assess residential, heat-damaged concrete and others use mechanical compression and shear testing, the California Department of Resources Recycling and Recovery (CalRecycle) considers all structural foundations to be destroyed by the heat from an unsuppressed structure fire. These slabs and foundations are no longer structurally sound and now considered debris. Some concrete structures such as retaining walls greater than four feet and piers, pilings, caissons, and horizontal structural will be left in place for slope stability. The IMT cannot guarantee these structures will be undamaged or are structurally sound. The owner should consult a licensed civil or structural engineer to determine the proper course of action to rebuild any concrete structures left by the IMT.

Finally, with the known amounts of carcinogens, heavy metals and asbestos in the ash and debris, structural slabs will need to be removed to assess the former building sites for residual ash contamination.

Should the owner wish to keep a structural foundation, the owner should not enter this public debris removal program and instead, contract with a private contractor to remove debris in accordance with local government requirements.

Technical Guidance

1. General Discussion

- a. All concrete or asphalt within the structural ash footprint will be removed. A distance of five feet from structural ash is used as a guideline. All concrete left in place will be made safe by cutting rebar flush or fencing retaining walls and/or pools. Generally speaking, if confirmation samples will be collected, then the concrete shall be removed. While cutting or breaking concrete, the contractor shall wear personal protective equipment (PPE), including eye and respiratory protection.

2. Structural Slabs and Foundations

- a. Required removal: Includes homes, cabins, mobile home slabs, barns, sheds, garages, other living structures and any concrete pad that was designed to hold a structural load. If the slab or pad was used to store vehicles or other commercial materials such as tires, building products, roofing tiles, etc., the impacted slab must be removed.
- b. Exception: Well slabs or pads. To protect the well casing and the integrity of the well, remove only ash and debris by hand and leave concrete pad around the well casing. Protect well with temporary construction fencing. Use PPE.
- c. Exception: Former slabs or pads that only held firewood or other inert material will be left in place. These slabs may be from a previous structure that was removed and/or not damaged by a fire.

3. Driveways

- a. Undamaged driveways shall be preserved to the extent practicable. The goal is to provide a stabilized construction entrance for reconstruction.
- b. If the driveway is damaged or contaminated (e.g. burned vehicles) by debris removal equipment or haul trucks to the extent that the driveway is unsafe, the driveway will be removed to the extent necessary. Remove the driveway to the nearest concrete joint or five feet if asphalt outside the contamination or damage. All driveway cuts will be made using a concrete saw. Use PPE.

4. Chimneys

- a. Required removal: See asbestos survey requirements.
- b. Exception: Patio fireplaces will not be removed unless deemed unsafe due to fire related damage.

5. Patio or other backyard features (such as waterfalls, sports courts, etc.)

- a. Leave in place unless feature poses a physical hazard from fire related damage or impacted by ash and debris.

6. Pools

- a. Leave in place. In general, pools are not eligible for removal and will not be drained by the IMT. The contractor will place metal fencing completely around the pool where feasible and notify the homeowner. Should the pool be structurally built into the foundation/slab, the IMT will discuss removal options with the property owner and Contractor to determine the course of action. Debris may be removed from the pool depending on site circumstances. The owner should contact the local government for assistance or evaluation of pools due to possible vector and health issues.

-
- b. Exception: Above grounds may be removed if the property owner wants the above ground removed. Pool water may be use as dust control if feasible.

7. *Walkways and private sidewalks*

- a. Leave in place.
- b. Exception: Unless necessary to remove for equipment access, covered in ash and debris, or damaged by equipment so that it is unsafe to walk on.

8. *Retaining Walls Less Than Four Feet*

- a. Leave in place unless covered in ash and debris or remove if the property owner wants the wall removed.
- b. Exception: If handwork cannot successfully remove the ash, remove wall and cut slope back to 2:1.

9. *Structural Retaining Walls Greater Than Four Feet*

- a. Leave in place. If connected to slab, make a cut with a concrete saw approximately 24 inches away from the wall. Notify owner that retaining wall is being left in place for erosion control and that the incident management team (IMT) has *not* evaluated the wall for structural integrity. Inform the local government the wall shall be evaluated by a licensed civil or structural engineer before reusing.
- b. Exception: If wall is unsafe and may collapse, remove wall and cut slope back to 2:1.

10. *Basements and Wine Caverns*

- a. Required to be removed. Once basements and caverns are removed, the Contractor will cut the slopes back to 2:1 and fence with temporary construction fencing.

11. *Footings*

- a. Required to be removed. Footings under the foundation will be removed.
- b. Exception: If footings are horizontal piers or other structural support below the slab, the concrete and/or steel will be cut/broken at the interface and rendered safe from tripping hazards.

12. *Caissons, Piers, Pilings, or Horizontal Structural Piers Under the Slab*

- a. Leave in place. Remove slab to grade minus 3/10 and cut rebar and other metal supports to the base of the concrete/steel piers/pilings.

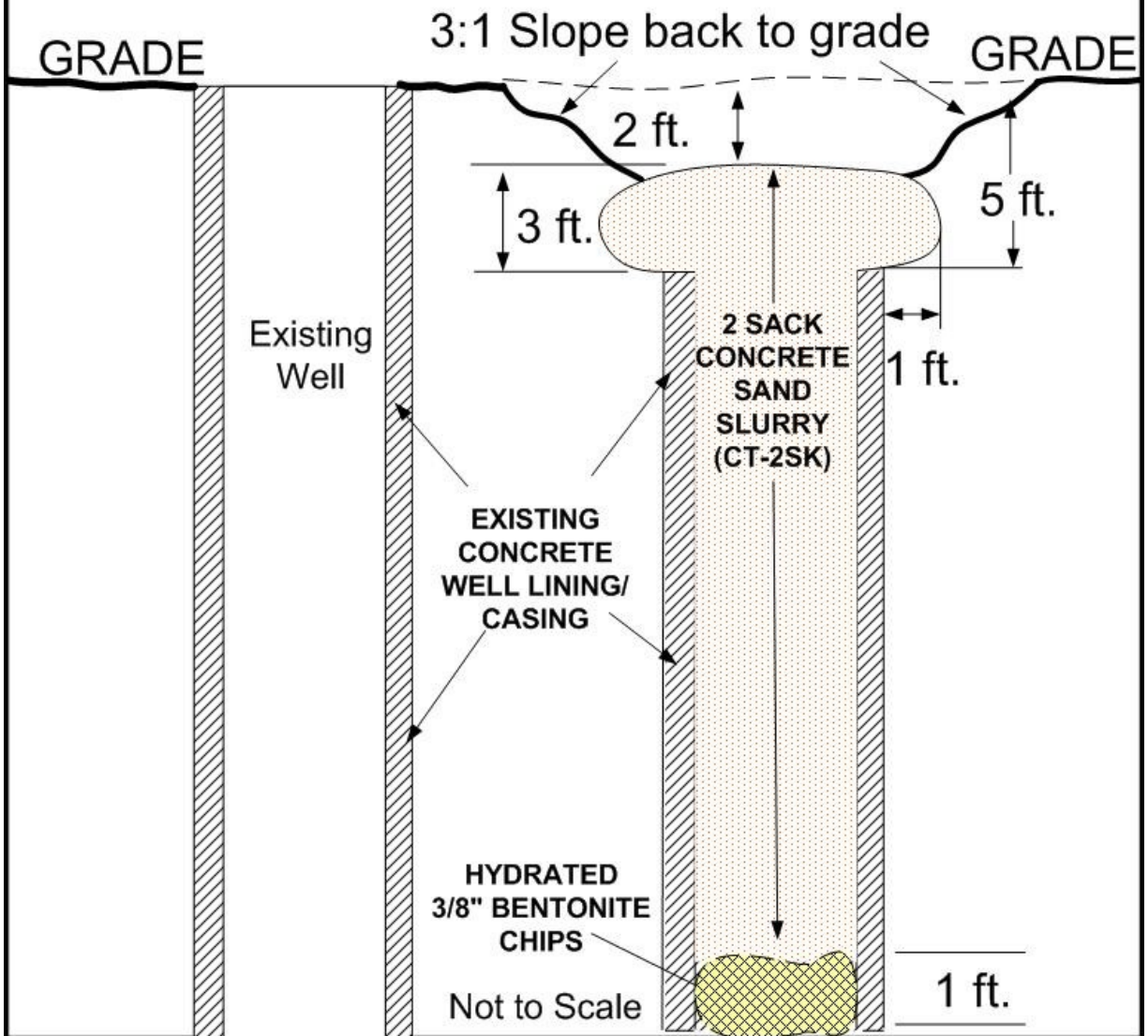
13. *Post Tension Slabs*

- o Required to be removed. All post tension slabs shall be removed by a qualified demolition contractor under a sperate work plan due to safety concerns. Workers should adhere to the recommended safe work practices and follow the prescribed procedures in the work plan. Demolition of any type of pre-stressed concrete structure requires extra diligence and awareness even for the most experienced workers.

EXHIBIT G

Hand Dug Well Destruction Plan (For wells that are lined to the bottom)

- 1 Cascade 3/8 bentonite chips into the bottom of the hole with an excavator. Hydrate chips intermittently with 10 gallons of water/bag.
- 2 Pour 2 sack sand slurry (CT-2SK), Fill well to 5 ft. below grade.
- 3 Allow concrete to set, then over excavate 1 foot beyond well lining and 5 ft. below grade. Then pour 3 foot concrete mushroom cap . Slope the sides 3:1 back to grade.



Hand Dug Well Destruction Plan (For wells that are undermined below "lining")

- 1 Pour 2 sack sand slurry (CT-2SK), vibrate if necessary to insure void spaces are filled.
Fill well to 5 ft. below grade.
- 2 Allow concrete to set, then over excavate 1 foot beyond well lining and 5 ft. below grade.
Then pour 3 foot concrete mushroom cap .
Slope the sides 3:1 back to grade.

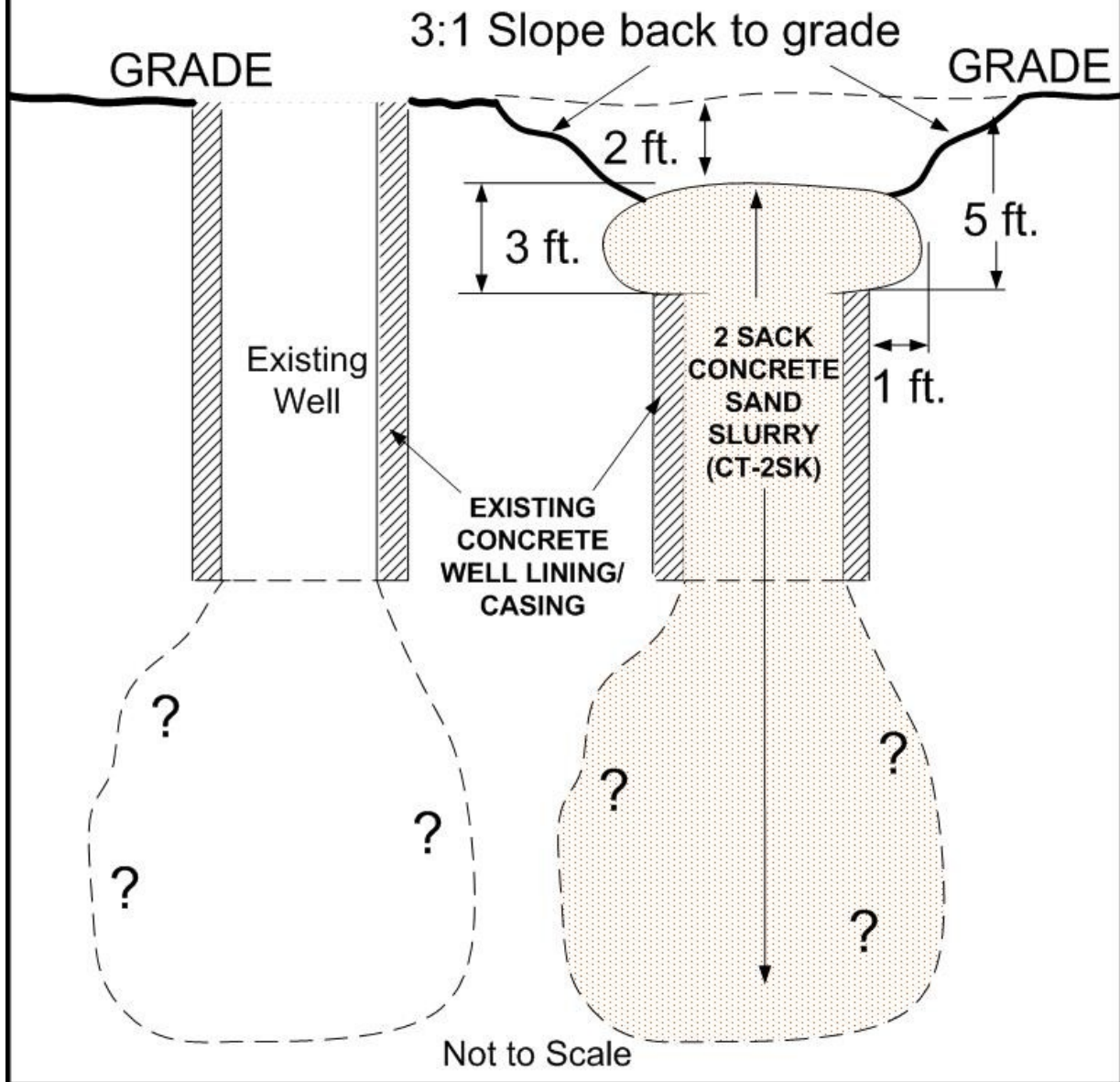


EXHIBIT H

NOTIFICATION FORM FOR CARB ASBESTOS NESHAP PROGRAM

EXHIBIT I

CAL/OSHA

WORKER SAFETY AND HEALTH DURING FIRE CLEANUP

December 2017

Workers face hazards even after fires have been extinguished. Employers performing cleanup and other work in areas damaged or destroyed by fire are required to identify and evaluate these hazards, correct any unsafe or unhealthful conditions and provide training and instruction to employees (California Code of Regulations, Title 8, sections 1509, 1511, 1518 and 3203).

Potential hazards in fire cleanup areas include, but are not limited to, the following:

Safety Hazards

- Fire and fire byproducts
- Electricity
- Flammable gases
- Unstable structures
- Demolition
- Sharp or flying objects
- Excavations

Health Hazards

- Carbon monoxide poisoning
- Ash, soot and dust
- Asbestos
- Hazardous liquids
- Other hazardous substances
- Heat illness

Confinement Hazard

- Confined Spaces

Fire and Fire Byproducts

Fire can continue to be a hazard during cleanup of a fire-damaged area. Heat sources from smoldering wood or other debris can come into contact with flammable material and could ignite and cause fire again. Employers should therefore provide fire extinguishers at every cleanup

job. Fire extinguishers are required to be provided when employees are working inside buildings or structures or on construction or demolition sites (sections 1922 and 6151).

In addition, toxic, flammable, or asphyxiating gases or vapors from fires may persist in enclosed spaces and under debris. See guidance on Respiratory Protection During Fire Cleanup Operations.

Electricity

After an outage, electrical deaths and injuries can occur as power lines are reenergized and electrical equipment is turned on.

- Employers must allow only qualified electrical workers, as defined in section 2700, to work on or near downed power lines and restore electrical power.
- Employers must allow only qualified line clearance tree trimmers, as defined in section 2700, to conduct tree trimming operations in the vicinity of energized power lines (sections 2950–2951).
- Other workers must not be allowed to perform any function in proximity to energized high-voltage lines (section 2946).
- Overhead electrical power lines must be considered energized until the utility company verifies that the lines are not energized, and the lines are visibly grounded at the work site (section 2946).

If water is or has been near electrical circuits or electrical equipment, employers must ensure that the following precautions are taken:

- Turn off power at the main breaker or fuse of the service panel for the building.
- Do not turn power on or use electrical equipment until electrical circuits and equipment are inspected by a qualified person, as defined in section 2300 and section 2700.
- Do not use electrical equipment or circuits that have been exposed to heat from fire until inspected by a qualified person, as defined in section 2300 and section 2700.
- Unless all electrical power is off, never enter flooded areas or areas with standing water.
- Do not touch electrical equipment if wet or if the ground or surface is wet.

If generators are used at the worksite, employers must ensure they comply with the following safety requirements:

- Generators should be properly grounded (except for portable and vehicle-mounted generators under certain circumstances, provided certain other safety measures are taken) (sections 2395.1-2395.114; exceptions and alternative safety measures are provided in section 2395.6).
- 120-volt, alternating current, single-phase, 15-ampere and 20-ampere receptacle outlets on construction sites that are not a part of the permanent wiring of the building or structure must have approved ground-fault circuit interrupters to protect employees

(section 2405.4, subsection (c)). Otherwise, the employer must implement an assured equipment grounding conductor program (section 2405.4, subsection (d)).

- No electrical power source, including a generator, is allowed to be connected to a premises' wiring system, or parts of such a system, unless positive means are used to prevent the transmission of electricity beyond the premises' wiring system or beyond any intentionally segregated parts of the wiring system. Steps to ensure that electricity is not transmitted beyond the premises wiring system would include switching the main power breaker or fuse to the "off" position, however this may not be sufficient in all cases (section 2320.9).
 - Once switched off, employers should consider locking out or tagging out the main power breaker or fuse to ensure that they are not inadvertently turned on (section 2320.4).
 - Employers should contact the utility provider before connecting a generator to a premises' wiring system.
- See additional information from PG&E on generator safety:
 - Practice safety with your electric generators
 - Electric Generator Safety

(See sections 2320.1–2320.10, 2340.1, 2380.1 and 2485.2)

Flammable Gases

Employers must ensure that pipes and tanks containing flammable gases, if potentially damaged or leaking, are properly shut off (subsection (c) of section 3329 and subsection (a) of section 5416). See additional information from the Pacific Gas and Electric Company (PG&E).

Unstable Structures

Never assume that fire-damaged structures or buildings are stable. They may be structurally damaged or weakened and can collapse without warning. Employers must ensure that precautions, such as the following, are taken:

- Do not allow work to be performed in or around any fire-damaged structure until it has been examined and certified that it is safe for work by a registered engineer or other qualified person.
- Assume that all stairs, elevated floors, and roofs are unsafe until inspected.
- Establish procedures and provide training to ensure that employees leave the structure immediately if it shifts, or if there are unusual noises or other signs of impending collapse.

(Sections 3203 and 3241).

Note: Even after a building or structure is determined to be safe, employees working in or around these structures may be exposed to falling objects. Employers must therefore provide

and ensure that employees wear hardhats or helmets, safety glasses, gloves and adequate foot protection such as steel-toed shoes (sections 3380–3385).

Demolition

During demolition or dismantling of damaged buildings, structures, and equipment, there is an increased risk of hazards such as unexpected collapse, falling objects, damaging utilities and exposure to hazardous materials. Before commencing work, employers should review all demolition safety requirements in sections 1733 –1737. Requirements include the following:

- A qualified person must conduct a written survey of the structure to determine the condition of the structural components and the possibility of an unplanned collapse of any portion of the structure and adjacent structures (section 1734).
- Employers must determine if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property. These hazards must be eliminated before demolition is started (section 1735).
- Demolition work must be under the immediate supervision of a qualified person with the authority to secure maximum safety for employees (section 1734).
- Utility companies must be notified and all utility services shut off or otherwise controlled before starting demolition, unless electricity or water is needed for demolition. In those cases, the utility services must be relocated or rearranged as necessary and protected from physical damage (section 1735).

Sharp or Flying Objects

Employees handling, cutting or breaking up debris may be exposed to sharp objects, flying objects and other cutting hazards. Employers must therefore provide and ensure that employees wear appropriate eye, hand and foot protection (sections 3380, 3382, 3384 and 3385). See guidance on Personal Protective Equipment During Fire Cleanup Operations.

Excavations

Digging with an excavator or other equipment presents the risk of striking and damaging underground installations such as natural gas, electric, sewer, and communication lines. Damage to underground installations may cause fire, explosion, electric shock, or release of toxic materials.

Employees entering an excavation may be injured or killed due to cave-ins, falling materials, or falling equipment.

Identifying underground installations before excavating

- Before starting excavation work, the approximate locations of all underground installations that may be encountered during excavation operations must be determined (section 1541 and Government Code section 4216.4).
- An excavator planning to conduct excavation work must notify the following entities of the excavator's intent to dig at least two working days before starting an excavation: (1)

the appropriate regional notification center and (2) all known owners of underground installations in the area who are not members of a notification center.

- o Before notifying the appropriate regional notification center, the excavation areas must be marked as specified in Government Code section 4216.2 (section 1541).
 - o For northern California, the regional notification center is Underground Service Alert North 811. Website: <http://usanorth811.org/>. Phone: 811
 - o For southern California, the regional notification center is Underground Service Alert of Southern California. Website: <http://www.digalert.org/>. Phone: 811
- After notifying the regional notification center and prior to beginning excavation work, the excavator must receive positive responses from all known owners/operators of underground installations confirming the locations of underground installations or confirming the owner/operator does not operate an underground installation that would be affected by the proposed excavation (section 1541).
- After the approximate locations of underground installations are determined and excavation work begins, the exact location of underground installations must be determined by safe and acceptable means (such as digging with hand tools), when approaching the approximate location of an underground installation (section 1541 and Government Code section 4216.4).
- All employees exposed to excavation hazards during excavation work must be trained in the notification requirements and excavation practices provided in section 1541 and Government Code sections 4216 through 4216.9 (section 1541).
- Any damage to underground installations discovered or caused during excavation work must be reported to the facility owner/operator or regional notification center (section 1541).

Protecting employees entering excavations

- A permit from Cal/OSHA must be obtained before the construction of excavations 5 feet or deeper into which any person is required to descend (section 341).
- Adequate protective systems must be used to protect employees entering excavations 5 feet or greater in depth, and where a potential for cave-in exists (section 1541.1).
- A stairway, ladder, ramp or other safe means of egress must be provided for excavations that are 4 feet or more in depth (section 1541).
- Employees must not be allowed to work in excavations where there is accumulated water, unless adequate precautions have been taken to protect employees (section 1541).
- Support systems must be installed to ensure the stability of structures adjacent to or adjoined to excavations (section 1541).
- Adequate protection must be used to protect employees from loose rock or soil that could fall or roll from an excavation face (section 1541).

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- Materials and equipment must be kept at least 2 feet from the edge of excavations, or retaining devices must be used to keep materials from falling into excavations, or a combination of both if necessary (section 1541).
 - Inspections of excavations, the adjacent areas, and protective systems shall be done by a competent person daily and as needed during each shift for indications of possible cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous conditions (section 1541).

See Article 6 of the Construction Safety Orders for a complete listing of title 8 requirements for excavation activities.

Carbon Monoxide Poisoning

Gasoline or diesel-powered pumps, generators and pressure washers may be used during cleanup. When in use, these machines generate carbon monoxide gas, which is colorless, odorless, tasteless and potentially lethal. It is nearly impossible to tell whether ventilation is sufficient to prevent excessive carbon monoxide buildup (section 5155) without using personal carbon monoxide monitors. Therefore, in most situations, employers must not use gasoline or diesel-powered equipment indoors (sections 3662, 5141 and 5146).

Ash, Soot and Dust

Ash, soot and dust disturbed during cleanup may be inhaled and cause irritation or damage to workers' lungs. Employers must therefore take the following precautions:

- Use feasible engineering controls to ventilate and provide filtered air to indoor work areas (section 5141).
- Use a high-efficiency particulate air (HEPA) vacuum when cleaning ash, soot and dust (section 5141).
- When exposures to airborne ash, soot and dust cannot be controlled within the limits provided in section 5155 (for carbon black, polycyclic aromatic hydrocarbons and particulates) or the exposures would probably cause injury or illness (sections 5140 and 5141), employers must provide and ensure that employees use properly fitted, NIOSH-certified air-purifying respirators designated as N-95 or greater (section 5144).
 - When an employer is required under Cal/OSHA regulations to provide employees with respirators or the employer requires employees to use respirators, the employer must have a written respiratory program that includes the elements listed in section 5144, subsection (c)(1).
 - When respirator use is not required by Cal/OSHA regulations or by the employer, employers may provide respirators at the request of employees or allow employees to use their own respirators if the employer determines that such respirator use will not in itself create a hazard. The employer must provide the respirator users with the information contained in Appendix D to section 5144 and must follow all other requirements in section 5144, subsection (c)(2).
 - See additional guidance on respiratory protection during fire cleanup operations and using N-95 (or greater) respirators.

Asbestos

Insulation, flooring, roofing materials, appliances, and furnishings in fire-damaged structures may contain asbestos, which can damage the lungs and cause cancer. Since asbestos does not burn, it becomes concentrated in the ash and debris when the rest of the structure burns. Asbestos related work is regulated under section 1529 and section 5208. The requirements are discussed on Cal/OSHA's Asbestos Information page

Hazardous Liquids

Fires in commercial and residential buildings and water used to fight fires can damage or dislodge tanks, drums, pipes and equipment that may contain hazardous liquids. Any cleanup of hazardous spills must be performed only by employees who have the required skills, knowledge and training (subsection (q) of section 5192). Employers must provide these employees with the necessary personal protective equipment and emergency equipment to perform the work (subsection (q) of section 5192). Other employers must ensure that damaged or dislodged equipment containing hazardous liquids is not moved or altered without first obtaining instruction from the local fire department.

Other Hazardous Substances

Residential and commercial structures are composed of materials that may release or break down into hazardous substances when burned. These materials include synthetics (such as plastics), petroleum products (such as asphalt shingles), treated wood, adhesives, and metals. Residences and business may also contain items that are composed of hazardous substances or that become hazardous when burned, such as electronics, appliances, batteries, vehicles, household chemicals, pesticides and herbicides. After a fire, the remaining ash, debris, and underlying soil will be contaminated with the hazardous substances. The dangers may not be obvious, because contaminated ash, debris, and underlying soil may look the same as uncontaminated material.

Some of the specific hazardous substances of concern include:

- **Arsenic** is a known human carcinogen and can cause nausea and vomiting, abnormal heart rhythm, blood vessel damage, nerve damage, and skin redness and swelling.
- **Cadmium** is a known human carcinogen and may also damage the lungs and weaken bones.
- **Lead** damages almost every organ and system in the body, particularly the brain and kidneys. Exposure to lead can also cause miscarriages and high blood pressure.
- **Manganese** can damage the nervous system and cause changes in behavior and slow, clumsy movements.
- **Nickel** can cause skin rashes. Breathing high concentrations of nickel dust may cause lung damage and cancer of the lung and nasal sinus.
- **Zinc** may cause skin irritation from direct contact.
- **Polycyclic aromatic hydrocarbons (PAHs)** may be carcinogenic, can inhibit the body's ability to fight infection, and can cause skin redness and inflammation.

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- **Polychlorinated biphenyls (PCBs)** may be carcinogenic and can cause liver damage, acne, and skin rashes.
 - **Polybrominated biphenyls (PBBs)** may be carcinogenic and can cause acne and skin rashes.
 - **Dioxins and furans** can cause skin rashes, liver problems, and elevated blood fats.

Dust generated from ash, debris, and underlying soil disturbed during cleanup operations may contain the hazardous substances listed above. Airborne exposures will vary from day to day and from job to job. Potentially toxic dust must be controlled by thoroughly wetting the debris, ash, and soil before and during removal. Respirators should also be used during fire cleanup work.

In addition to breathing contaminated dust, workers may be exposed to hazardous substances when it gets on their skin. While some hazardous substances can be absorbed through the skin, any can be ingested unknowingly if workers do not wash their hands and face before eating, drinking, or smoking. Employers are required to provide washing facilities with soap and water and make them accessible to all employees (section 1527 and section 3366).

If employees are working in potentially contaminated areas, the employer must train employees on the hazards and must provide and ensure that employees use the correct respirators, gloves and other personal protective equipment (sections 3380–3385, 5144, and 5194). See guidance on Respiratory Protection During Fire Cleanup Operations and Personal Protective Equipment During Fire Cleanup Operations.

Heat Illness

For employees working outdoors, employers must provide potable drinking water, appropriate rest breaks and access to shade to prevent heat illness (section 3395). More detail is available on Cal/OSHA's Heat Illness Prevention page.

Confined Spaces

A confined space is a space that has limited means for entry and exit and is not designed for continuous employee occupancy. Examples include manholes, crawl spaces, pits, tanks and silos. Employees working in confined spaces can face life-threatening hazards such as toxic exposures, asphyxiation, electrocutions and unguarded moving machinery. Employers need to evaluate worksites to determine if there are confined spaces, and take precautions to ensure that employees who may enter confined spaces are protected. Such precautions include, but are not limited to:

- Procedures to identify confined spaces that may contain serious hazards
- Procedures to ensure unauthorized persons do not enter these spaces
- Development of a written confined space program if employees need to enter these spaces
- Establishment of an entry permit system

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- Identification and evaluation of all potential hazards that may exist before entering a space, as well as those that may develop because of work activities
 - A plan to eliminate or control all identified hazards
 - Continuous monitoring of atmospheric hazards
 - Training program for all workers who will enter a confined space or serve as an attendant to protect authorized entrants
 - Development of an emergency and rescue plan with training and equipment in case an unforeseen situation occurs

(Sections 1950-1962 and 5156-5158)

Additional Information

Fire Cleanup Hazards and Safety Precautions

- Federal Occupational Safety and Health Administration
- National Institute for Occupational Safety and Health
- US Centers for Disease Control and Prevention
- Labor Occupational Health Program, UC Berkeley
- California Air Resources Board
- California Department of Public Health

Wildfire Cleanup Training Tools in English and Spanish

- Construction Equipment
- Effective Training
- Protect Your Health

APPENDIX A
WILDFIRE-DAMAGED STRUCTURES
ASBESTOS SITE ASSESSMENTS
SOPs FOR THE
“CALIFORNIA WILDFIRE ASBESTOS SURVEY”

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Attachments

- 1 Field Data Sheet
- 2 Asbestos Abatement Clearance Confirmation Form

**WILDFIRE-DAMAGED STRUCTURES
ASBESTOS SITE ASSESSMENTS
STANDARD OPERATING PROCEDURE (SOP)
“CALIFORNIA WILDFIRE ASBESTOS SURVEY”**

1.0 BACKGROUND

It is well documented that asbestos presents a significant risk to human health if it becomes airborne. Recent structural debris cleanup activities, conducted by CalRecycle from 2007 to 2017, have identified inconsistent interpretation of policies and regulations for conducting emergency debris removal actions throughout the State of California. The main issue is whether or not structural ash and debris from a wildland fire or other large-scale disaster should be treated as asbestos-containing materials (ACM) under the National Emissions Standards for Hazardous Air Pollutants (NESHAP) due to an assumption that the ash and debris may contain asbestos. The California Department of Toxic Substances Control (DTSC) currently classifies ACM as hazardous waste if the waste contains more than one percent (>1%) friable asbestos. Some California Air Quality Management Districts (AQMD) have determined all ash and commingled debris from a structural wildfire event should be managed as a California hazardous asbestos-containing waste in accordance with federal asbestos regulations (NESHAP) and local air quality regulations. However, other AQMDs have not mandated this requirement and have cited the NESHAP exemption for structures totally destroyed by a natural disaster. While federal asbestos regulations relate to the demolition, transport, and disposal requirements, they do not apply to residential structures completely destroyed by a natural disaster; the regulations do, however, apply to structures and chimneys partially destroyed by a natural disaster.

These varying requirements have resulted in inconsistent cleanup and waste disposal practices for local governments and property owners throughout the state during disasters. This inconsistency has also led to potential asbestos exposures to debris removal workers and others in the community. To reduce the exposure from friable, bulk asbestos, CalRecycle and its Certified Asbestos Consultants (CACs), environmental consultants and Certified Industrial Hygienists (CIH) have developed the following “California Wildfire Asbestos Survey” protocol to be used for residential and commercial properties impacted by a wildfire.

1.1 Goal

The goal of this SOP is to reduce the exposure from bulk asbestos to the debris removal workers; incident management personnel; nearby residents and neighbors in the community; and others handling, transporting, and disposing of the debris. This SOP presents procedures to identify, remove, and properly dispose of bulk asbestos from the waste stream.

1.2 Purpose

The purpose of this “California Wildfire Asbestos Survey” SOP is to define procedures that will be followed during a coordinated structural debris removal conducted by CalRecycle and its consultants and contractors. This SOP will be used for all site assessments to identify and remove bulk ACM.

The objectives of this SOP are to establish minimum procedures to verify that the precision, accuracy, completeness, comparability, and representativeness of all data collected throughout the project duration is acceptable; and to ensure that all information and decisions are technically sound and properly documented.

1.3 Scope

This SOP presents the policies, organization, objectives, and functional activities designed to complete the objectives of the tasks to be performed during the asbestos site assessments, which will be completed prior to site debris removal. This SOP also addresses the sampling and analytical methods to be used during the asbestos site assessments.

2.0 PROCEDURES

2.1 Pre-assessment Preparation

Prior to conducting an asbestos site assessment, personnel will follow the resource, safety, and training procedures described in the following sections, and adhere to requirements listed below.

2.1.1 Requirements and Resources

The following sampling equipment and field supplies are required for asbestos assessments:

- Sharpie pen
- Sample collection bags
 - o Ziplock – 1-gallon plastic bag
 - o Whirlpak -4-ounce sample bag or similar sized Ziplock bag (1 quart)
- Hammer
- Pry bar
- Chisel
- Hand spade or brush
- Bucket (to hold sampling supplies)

The following forms/equipment are needed for field documentation:

- Field Data Sheets (see Attachment 1)
- Asbestos Abatement Clearance Confirmation Form (see Attachment 2)
- Laboratory Chain of Custody (COC)
- Digital camera and memory (greater than 32 MB)

2.1.2 Personal Protective Equipment

A minimum of Level D personal protective equipment (PPE) will be worn in the field. Level D PPE consists of:

- Short or long-sleeve shirt and long pants
- High visibility safety vest
- Safety glasses or goggles
- Sturdy safety-toe work boots
- Hard hat (where overhead hazards are present)

Whenever a member of the asbestos assessment team or the asbestos clearance team enters the contaminated fire debris footprint (i.e., exclusion zone), protective equipment will be worn. Based on the anticipated hazard level, personnel completing asbestos assessments and clearance inspections will wear Level C PPE. Level C PPE consists of:

- Disposable coveralls (such as Tyvek)
- Outer gloves (neoprene, nitrile, or other)
- Sturdy safety-toe work boots
- Disposable boot covers or Tyvek-booted coveralls
- Full-face or half-face, air-purifying respirator with National Institute for Occupational Safety and Health (NIOSH)-approved cartridges with a particulate rating of P100 or OVP100 to protect against organic vapors, dust, fumes, and mists.
- Safety glasses or goggles (with a half-face respirator only)
- Hard hat (face shield optional).

2.1.3 Training

CACs and Certified Site Surveillance Technicians (CSST) will have 40-hour HAZWOPER training, a current 8-hour HAZWOPER refresher certificate, a current medical clearance, and a current respirator fit test report.

All personnel scheduled to conduct asbestos assessments will be trained and indoctrinated in all sections of this SOP document and quality control (QC) activities. A field staff orientation and briefing will be held before the initiation of site assessment activities. Replacement personnel brought in during periodic rotations will review and sign off on the SOP and receive asbestos field assessment procedure training from the asbestos field team leader before beginning field activities. The field team leader will ensure that personnel are familiar with the chemical hazards and physical layout of the project site and will assign field and administrative responsibilities. Training will also be provided for the completion of all project documentation and field procedures. Information on safety, security, communications, transportation, and site services and facilities will also be provided. All field and administrative personnel will receive a copy

of the SOP in a timely manner to allow for a sufficient review period before working on site.

All inspectors will be field trained by a wildfire debris ACM inspector prior to beginning field surveys. This training will include any specific information needed for performing asbestos site assessments for wildfire damage structures.

2.2 Asbestos Assessment

The Prime Consultant (Bid Pending) will identify an exclusion zone, contamination reduction zone, and a support zone, as described below.

- An exclusion zone (EZ) contains areas where contamination is either known or likely to be present or, because of work activity, has the potential to cause harm to personnel. The exclusion zone is identified as the debris/ash footprint of each property.
- The contamination reduction zone (CRZ) is an area of the property not visibly contaminated with ash and debris. The contamination reduction zone will be used for doffing PPE.
- A support zone (SZ) may consist of any uncontaminated and nonhazardous part of the property. Donning of clean PPE is completed in the support zone.

The Primary Environmental Consultant will evaluate the property from outside the exclusion zone and generate a plan for assessing the area. Personnel will not enter the exclusion zone without proper PPE.

An assessment of homes in the program will be performed using a modified Asbestos Hazard Emergency Response Act (AHERA) sampling approach on each property for suspect ACM. The modified AHERA approach is outlined in Section 2.3.2 of this SOP. Upon completion of the assessment the assessor will exit the exclusion / CRZ and will remove contaminated PPE and bag on site. Bagged PPE will either be left on site or disposed of properly.

2.2.1 Visual Assessment

The CAC or CSST will evaluate each property for suspect ACM. The asbestos assessment will begin with the main structure (house), followed by outbuildings, and then the grounds.

All burn areas and ash footprints will be entered to evaluate the structures or areas for suspect materials. Typical suspect construction materials may include; stucco, drywall or plaster wall systems, asphaltic roofing, vinyl flooring, vapor barrier felt and paper, duct and furnace insulation, mortars and grouts, and cementitious asbestos products (siding, roofing, flue pipes, underground pipes, heat barrier panels, etc.). Concrete structures, foundations, chimneys and driveways may also be sampled if the incident management team (IMT) elects to recycle the concrete.

The assessor shall also document and notify the IMT of any structure or debris pile that has a high density of suspected ACM such as transite siding/roofing or vermiculite

insulation or other material. These types of sites will be considered high asbestos hazards parcels.

Minor (less than 1 foot deep) debris and ash may be moved to assess materials beneath where warranted. The CAC or CSST will not move heavy debris, such as appliances and vertical roofing panels, to access suspect materials during evaluation and sampling. Attempts to observe flooring will be made by clearing debris from areas with a hand spade or brush. The inspector will not “dig.” The hand spade or brush will only be used to move or gently lift material where suspect asbestos flooring (vinyl floor tile or sheet flooring) may exist, such as in the kitchen, dining room, restroom, laundry room, or entry area of a structure. Appliances such as stoves, furnaces, and ducting will be evaluated for suspect insulation and cementitious materials. Areas around typical plumbing and mechanical structures, such as water heaters, furnaces, and plumbing structures, will be evaluated for flue piping and insulation materials. Other suspect non-construction materials will also be assessed; these materials may include automotive brake pads, mid-century electronics, camp stoves, salvaged materials (cementitious transite asbestos pipe), transite siding, or other suspect materials.

2.2.2 Chimney Drop Observation

Since chimneys are considered a free-standing structure, a full NESHAP asbestos survey is required. Each standing chimney on a property will be knocked over using one to two water streams to abate potential dust and exposures. The chimney shall be prewetted along with the fall zone. Once the chimney is safely on the ground, the CAC or CSST shall visually observe the interior of the chimney flue for suspect materials. If no suspected asbestos materials are identified, then the debris removal may commence. If additional suspect materials are identified, they may be abated by a state licensed asbestos abatement contractor at that time as suspect, or sampled for confirmation. The debris removal will be postponed until the suspect materials are confirmed as non-ACM or removed from the work area. The CAC or CSST will provide a verbal notice of observation finding to the on-site task force leader or monitor immediately after inspection. The observation findings will be documented and conveyed to the IMT at the end of the day.

2.3 Sampling Protocols for Structures and Debris

The type and condition of a structure and debris impacted by a wildfire will determine the asbestos sampling protocol used for this “California Wildfire Asbestos Survey.” Based on past CalRecycle structural debris removals, there are five types of asbestos sampling (see Sections 2.3.1 and 2.3.2). All sampling of suspect ACM will be conducted by a CAC or a CSST, working under the direction of a CAC. The CAC or CSST will collect samples of suspected ACM in representative lots specific to each property. The samples will be analyzed by polarized light microscopy or transmission electron microscopy using the methods described in the U.S. Environmental Protection Agency (EPA) Method for the Determination of Asbestos in Bulk Building Materials EPA/600/R-93/116.

All asbestos sampling will be performed using NESHAP regulations and AHERA sampling protocols or using the “California Wildfire Asbestos Survey” protocols described below.

Specific sampling locations will be identified, and samples will be collected from suspect ACM within the ash footprint of each structure and the property. Samples will be placed in resealable plastic bags and labeled with a unique sample number.

During the asbestos site assessments, the Primary Environmental Consultant will collect samples of suspect ACM based on the types described below.

2.3.1 California Wildfire Asbestos Survey

Type 1. Where debris is on the ground (structure destroyed with less than two contiguous walls standing), a non-AHERA sampling protocol will be utilized as follows:

- Evaluate each structure's construction materials separately focusing on bulk material that, if not removed, could pose a hazard when loaded into a truck. Bulk is defined as something larger than a cell phone that can be removed by hand.
- Collect one sample of each suspect material to be analyzed for asbestos fibers using EPA Method 600/R-93/116.
- For materials not associated with a structure, collect one sample per material.
- For free-standing single walls, consult with the IMT. Some single walls may be supported by heavy equipment or braced or laid down to allow for sampling and removal of ACM. If the wall cannot be rendered safe, the wall will be carefully demolished by the contractor using heavy equipment and water spray. Once the wall is no longer free standing, sample each layer of the wall for ACM.

Type 2. Chimney structures:

- Collect one sample per suspect material.
- Consult with the IMT to determine whether NESHAP notification is required prior to demolition.
- Conduct a visual assessment of chimney interior (flue) at demolition to determine whether additional suspect materials are present.

Type 3. Foundations, slabs, and walkways:

- Sample to determine whether recycling is an alternative to disposal.
- If materials are contaminated with asbestos-containing mastics, caulks, or other coatings, the concrete components will be flagged as "non-recyclable."

2.3.2 NESHAP Protocols

Type 4. Where structures are destroyed, but have two or more contiguous walls standing:

- Evaluate the type of wall construction and stability. Some standing walls may be constructed of masonry block or concrete; however, others may contain multiple types of suspect ACM. If the integrity of the walls is in question, consult an engineer or construction professional with structural building experience to evaluate whether the walls are structurally safe to obtain samples per AHERA protocols. If the walls are not structurally safe, the contractor will use bracing or heavy equipment to ensure wall safety. Once the wall is determined to be safe, collect samples per AHERA protocols. If there are questions, consult with the IMT to determine whether NESHAP requirements apply.
 - o If NESHAP requirements apply, collect samples using AHERA materials classification protocols
 - Surfacing: Use the 3-5-7 rule. Collect three samples from a less than 1,000 square-foot area; five samples from a 1,000- to 5,000-square-foot area; and seven samples from a greater than 5,000-square-foot area.
 - Thermal systems insulation: collect three samples per homogenous area, one sample per patch
 - Miscellaneous: collect at least one sample from each piece of suspect material
 - o If NESHAP requirements do not apply, collect one sample per suspect material (as listed in Type 1 above).
 - o Consult with the IMT to determine whether NESHAP notification is required prior to demolition.

Type 5. Where structures are partially damaged or partially burned:

- Consult with Operations regarding property status in the demolition program.
 - o If the building is included in the demolition program, conduct sampling as listed above in Type 4.
 - o If the building is not included, note condition of structure and do not sample.
 - o Consult with the IMT to determine whether NESHAP notification is required prior to demolition.

2.4 Abatement Clearance Inspections and Approval

The IMT will develop a list of properties with confirmed or assumed ACM for abatement per the CalRecycle Operations Plan. CalRecycle-approved abatement contractors will remove identified materials from each property.

A Primary Environmental Consultant task force leader or monitor will accompany the abatement contractor during the work day and record the abatement contractor's time at each property on the Asbestos Abatement Clearance Confirmation Form. When abatement is complete, the task force leader or monitor will contact a Primary Environmental Consultant CAC/CSST for visual clearance.

The CAC/CSST will review the asbestos assessment documentation for identified asbestos containing materials and material locations. The CAC/CSST will inspect the removal locations to determine whether all identified asbestos materials have been removed by a state licensed asbestos abatement contractor. If not, the CAC/CSST will provide feedback and location of materials remaining. If other suspect ACM are observed within the ash footprint that have not been previously assessed or sampled, the CAC/CSST will coordinate removal of suspect materials with the abatement contractor and Operations.

Following removal of identified ACM, the CAC/CSST will:

- Count the waste bags for each material removed;
- Identify each line item on the Asbestos Abatement Clearance Confirmation Form;;
- Indicate removal is completed;
- Initial each line item; and
- Sign and date the form.

If the abatement on a property is not completed within 1 day, the CAC/CSST will count bags of waste removed, indicate removal not completed, and initial the form. The CAC/CSST will sign the form only after complete removal has been achieved. The location and details of each property cleared will be reported to Operations at the end of each workday.

3.0 DOCUMENTATION

This section describes the field documentation procedures and includes the types of field documentation, instructions on how to correct field documents if errors occur, and the process for documenting deviations from field procedures prescribed in this SOP.

Field documentation for this project will include:

- Field data sheets;
- Photographic logs and summaries; and,
- Sample COC forms.

Information pertinent to the suspect building material samples will include:

- The sampling location;
- Sample identification number; and
- A description of the suspect ACM, including estimated quantity.

3.1 Field Data Sheets

The field staff will be responsible for documenting information from each sampled property on field data sheets that will be maintained for the duration of the project. This information will be manually recorded on the sheets by the asbestos inspection team members and reviewed by the asbestos field team leader at the end of each shift.

Information on the field data sheets will include:

- Type and description of suspect material;
- Estimated ACM quantity;
- A general map of sampling locations and suspect material distribution; and,
- Any limitations to ash footprint and grounds evaluation.

Limitations to the evaluation may include unsafe conditions such as: animal obstruction, structurally unsafe buildings, overhead hazards, underfoot hazards (basements, voids, unstable ground); depth of debris limiting floor assessment, or heavy metal debris covering suspect material areas. ALL limitations to evaluation or sampling MUST be reviewed and approved by the asbestos field team leader and the IMT.

Limitations due to unsafe building access may restrict sampling in partially standing structures, basements, cellars, confined spaces, and other non-accessible areas. Structures with such limitations will be flagged for further CAC investigation during the excavation process at which time any suspect ACM will be removed and disposed of by an abatement contractor working alongside the excavation team on a contractor-assist basis.

3.2 Bulk Sample Designation

A sample numbering scheme has been developed that allows each sample to be uniquely identified and provides a means of tracking the sample from collection through analysis. The numbering scheme will use the following three-part code which indicates the:

- Project designation (using a project acronym),
- Property assessor's parcel number (APN) and
- Sequence number of each sample collected from each suspect material.

An example numbering scheme for the Camp Incident would be:

XFI = Project designation acronym for Camp Incident
010-0-123-456 = Property assessor's parcel number

01 = This is an arbitrary sample number beginning at **01**, sequentially assigned to each sample collected at each property.

The sample number for this example would be written with a permanent marker on the outside of each sample bag, along with a description of the suspected asbestos-containing material collected. For example:

XFI-0100123456-01
Vinyl Floor Tile and Black Mastic

The sample number will be recorded on sample bags, field data sheets, COC forms, and other records documenting sampling activities. Sample identification numbers and material locations will be denoted on the general map of sampling locations on the field data sheets. Sample numbers will be written on sample containers using permanent markers.

An outer sample bag will also be used to contain all the samples collected at each property. The following information should be written with a permanent marker on the outer sample bag:

APN designation, date, and property address (example below):
010-0-123-456
3/2/18
1234 Main Street

3.3 *Photographic Documentation*

During the inspection, color photographs will be taken of each piece of suspect ACM. Photographs will also be taken of each building where suspect ACM is identified. Field team members will organize photographic documentation in a standard method that can easily be retrieved by the data entry teams at the end of the day. The following organizational method will be used:

- 1) Take a photo of the field data sheet, including the property information completed at the top of the form, to designate that subsequent photos are collected at that property.
- 2) Take a photo of the house or main structure.
- 3) Take photos of each suspected asbestos-containing material sampled within the house or main structure.
- 4) Take a photo of the next building with suspect ACM, followed by photos of each suspect ACM sampled in that building.
- 5) Follow this procedure for each subsequent building on the property.
- 6) Review the photos stored in the camera and enter the photo numbers obtained for each sampled material on the field data sheet.

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- 7) Take a photo of the completed field data sheet to designate photo collection at the property is completed.

3.4 Chain of Custody (COC) Procedures

The Primary Environmental Consultant will use standard sample COC procedures to maintain and document sample integrity during collection, transportation, storage, and initial analysis. A COC establishes the documentation necessary to trace sample possession from time of collection through sample analysis and disposition. A sample is in the custody of a person if any of the following criteria are met:

- The sample is in a person's physical possession.
- The sample is in a person's view after being in his or her physical possession.
- The sample was in a person's physical possession and was then locked up or sealed to prevent tampering.
- The sample is kept in a secured area.

The sample collector will complete a COC form to accompany each sample delivery container and will be responsible for shipping samples to the accredited laboratory. The sample collector will provide the project number and the sample collector's signature as header information on the COC record.

For each bulk sample, the sample collector will record the following information on the COC record:

- Project name (Camp Incident)
- Project number
- Sample identification number
- Date of sample collection
- Name and signature of sampler(s)
- Sample type (bulk or air sample)
- Number of sample containers
- Analyses requested
- Turnaround time
- Signature of individuals involved in custody transfer, including the date and time of transfer
- Air bill number (if applicable)
- Project contact name and phone number

Unused lines on the COC record will be crossed out. When shipping the samples, the sample collector will sign the bottom of the form and enter the time (24-hour format) and

date that the samples were relinquished. The sample collector will enter the Campier name and air bill number on the form. A second member of the field crew will review the completed COC to ensure that required information is not omitted and that unused lines are crossed out. The original signature copy of the COC record will be enclosed in a plastic bag and secured to the inside the shipping box. Copies of the chain-of-custody record and the air bill will be retained and filed by field personnel before the containers are shipped.

3.5 Laboratory Data Interpretation

Laboratory data will be reviewed by individuals trained in data interpretation. Laboratory results will be compared with the field data sheet and logged into the IMT data tracking software with the date the results were received, and electronically filed with the COC form.

- Samples with asbestos concentrations detected with results greater than 1 percent asbestos (>1%) will be flagged as ACM for abatement prior to debris removal.
- Samples with asbestos concentrations detected with results less than 1 percent (<1%) will be flagged for further analyses by 400-point count or it will be assumed to be ACM (>1%) and removed prior to debris removal. (Point count analysis must be approved by IMT).
- Materials confirmed to contain <1% or “asbestos not detected” will be removed during debris removal operations and not flagged for abatement prior to removal

4.0 QUALITY CONTROL

Quality assurance (QA) will be required for ensuring that all information, data, and decisions resulting from the sampling activity are technically sound and properly documented. Quality control (QC) procedures will be used to ensure that the QA system is being followed. The primary goal of the California Wildfire Asbestos Survey will be to provide valid and representative data to characterize ACM in the wildfire-damaged buildings.

4.1 Quality Program and Review Procedures

The asbestos field team leader will be responsible for ensuring that all QA/QC objectives are met during the asbestos sampling and building clearance procedures during the project. To ensure that QA/QC procedures are implemented, the field team leader will conduct and monitor:

- Standard sample handling and shipping procedures;
- Standardized forms for recording field and analytical data, prepared sample identification tags, and COC records;
- Field team performance audits;
- Standardized protocols for material sampling and clearance inspection field procedures;

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- Standard procedures for sample collection; and,
 - Data documentation audits to determine data adequacy.

The asbestos field team leader (or assigned deputy) will be required to sign off on each field data collection sheet as documentation that the field data sheet was reviewed for completeness and data collection quality objectives.

Attachment 1 – Field Data Sheets

Attachment 2 - Asbestos Abatement Clearance Confirmation Form

APPENDIX B
BACKGROUND SAMPLING AND CLEANUP GOALS REPORT
(TBD)

APPENDIX C
COMMUNITY HEALTH AND SAFETY PLAN
(TBD)

APPENDIX D
AIR MONITORING PLAN
(TBD)

APPENDIX E
CALRECYCLE'S SITE HEALTH AND SAFETY PLAN
(TBD)

APPENDIX F
SOIL SAMPLING CONFIRMATION PLAN
(TBD)